



Annual Report 2020

Perform all your activities with Love.
Love should originate from the source, i.e. the heart and not by force. Chant His name wholeheartedly at least for half a minute, that is enough. One teaspoon of cow's milk is better than barrels of donkey's milk. God is interested in quality, not in quantity.

Excerpts from Divine Discourse: 4 March 2000

SRI SATHYA SAI BABA
Revered Founder Chancellor, SSSIHL





Foreword

Sri Sathya Sai Institute of Higher Learning (SSSIHL) has long been synonymous with Values-based Integral Education, the foundations of which have been engrained in the University by the message and tireless efforts - in its formative years - of our Revered Founder Chancellor, Bhagawan Sri Sathya Sai Baba. This approach pervades all aspects of our system of education, and aims at the all-round development of the personality of the student, in line with the National Education Policy 2020, by integrating the physical and mental with the emotional and spiritual. The Self Reliance activities built into our University curricula trains the students to become self-reliant in their chosen fields, so that they may contribute, in due course, to the making of an Atmanirbhar Bharat.

The COVID-19 crisis has shown us that this is particularly relevant now. Our families, our society, and our nation need men and women of character to stand up and meet the challenges head on. In many ways, therefore, this has been a year both of reflection and forward-thinking at the University. I am proud to report that we have not only overcome the complexities and adversities that the pandemic has brought, but have done it with the care and thoughtfulness that is very characteristic of the SSSIHL.

We have fast-tracked the pace of digitalization. This has enabled us to successfully conduct our examinations, complete the admission process, and initiate the teaching procedures in the best possible way. In addition, our researchers have embarked on a number of areas of research associated with COVID-19, such as a Rapid Testing Platform and Natural Products & Derivatives, in an effort to find solutions that will protect our communities, and offer expert advice to local and national governments. These are highlighted in the report.

Our students continue to have access to the best possible infrastructure and facilities, thanks to the continued support of the Sri Sathya Sai Central Trust. In the past five academic years, its investment of ₹53 crores has resulted in excellent academic infrastructure, buildings, laboratories and world-class research facilities in the Central Research Instruments Facility (CRIF) and the Central Research Laboratory (CRL). Many of our application-oriented research projects have been of such high quality and value that we have filed for patents in order to protect our intellectual property, on the one hand, and, on the other, chased the 'Affordable Innovation' concept that may lead to the creation of an 'Innovation platform' within SSSIHL. It is envisioned that this platform will create an ecosystem for startups that will take the benefits of research at SSSIHL to the society.

The results of these are visible. Research funding from agencies like DST, DBT, CSR, ICMR, and the Tata Foundation

Trust has led to the successful clinical validation of the first prototype of a portable, cost-effective and high-resolution Gamma Camera system - SAI-GC - for small organ imaging, including that of non-invasive cancer. Other areas of research such as Disease Biology, Environmental Studies, Functional Materials and Composites, Nanomaterials, Point-of-Care Devices, Edible or Medicinally Active Natural Products, etc., are showing similar promising results. Most importantly, almost all our research applications are intended to directly benefit those who belong to the lowest strata of society in diverse ways.

The University continues in the upward path of the previous years in all areas, thereby reinforcing the important role we play in the field of education. Our strength in academics, from the consistent above 95% pass rate in Examinations to a high degree of students passing National-level examinations, is complemented by the continued growth of needs-based research areas across all disciplines. We have broken new grounds in the national ranking, and hope to get better in the years to come.

Perhaps, what is most satisfying to me, personally, is the continued enthusiasm shown by our student and teaching community for the 'Integral Education' activities. This is best highlighted by the silent but distinct community service activities that the students of each Campus carry out year after year. A special mention needs to be made of the Grama Seva activities that our Beloved Bhagawan commenced in the year 2000, and which continues to this day, in an evolved format. These activities aim at sensitizing our students to the needs of the less privileged who live in the rural communities of India. This widening access to the community, we hope, will shape our students into responsible citizens who will help combat the social, and environmental challenges that we are facing today.

Our students and staff continue to be the key to our ongoing success. I would like to thank them for their commitment and hard work, especially considering the crisis we find ourselves in. I also thank the alumni, the donors, and the members of the Sri Sathya Sai Seva Organizations for their sustained love and support. Lastly, I am grateful to the Sri Sathya Sai Central Trust for their continued support and guidance.

I take great pleasure in sharing the SSSIHL Annual Report 2020 with you, and pray to our Revered Founder Chancellor, Bhagawan Sri Sathya Sai Baba, to guide and bless us so that we continue to come up to His expectations.

Prof. (Dr.) C B Sanjeevi
Vice-Chancellor



Annual Report 2020

1 June 2019 to 31 May 2020

Contents

Introduction

Sri Sathya Sai Values-based Integral Education	8
Integral Education Activities	10
Governance & Structure	12
SSSIHL Statistics 2019/20	14

Academics & Research

Events	16
Achievements & Participation	22
Central Research Instruments Facility (CRIF)	34
SSSIHL COVID-19 Research	36
Research Areas	37
Funded Research Projects	48
Research Publications	50

Integral Education

Special Annual Events	58
Community Service	64

Sri Sathya Sai Values-based Integral Education

Sri Sathya Sai Institute of Higher Learning (Deemed to be University), Prasanthi Nilayam, Andhra Pradesh, India, is a visible manifestation of Bhagawan Sri Sathya Sai Baba's vision of education for human transformation.

Bhagawan Baba has designed the system of Sri Sathya Sai Values-based Integral Education in such a manner that between the time an 18-year old student joins the Institute and when she or he graduates (at the age of 21 or 23), there is a deep inner transformation that takes place. This concept is very unique at the university level.

The Institute hosts over 1350 undergraduate, postgraduate, professional and research students across four campuses:

For women students:

- Anantapur Campus at Anantapur, Andhra Pradesh

For men students:

- Prasanthi Nilayam Campus at Puttaparthi, Andhra Pradesh
- Brindavan Campus at Whitefield, Bangalore, Karnataka
- Muddenahalli Campus at Muddenahalli, Karnataka

Programmes offered include:

- Undergraduate: B.A., B.Com. (Hons.), B.Sc. (Hons.), B.B.A., B.P.A.
- Postgraduate: M.A., M.Sc.
- Professional: B.Ed., M.B.A., M.Tech.
- Research: Ph.D.

A Modern Gurukula

Sri Sathya Sai Institute of Higher Learning (SSSIHL) was founded to inculcate ethical and moral values in students. These ethics and morals form the undercurrent of every subject taught at the University. This helps students develop a wholesome and balanced personality, one where academic competence is supplemented with good character.

This holistic development of students can only be possible in an environment that encourages the development of the student's mind, body and spirit.

To facilitate this, the University has a compulsory residential policy for all students and doctoral research scholars. It is an essential ingredient for the University's Values-based Integral Education to achieve its objective of transformation. The environment is similar to the ancient Indian Gurukula system of education, in a modern context. Teachers and students live and grow together in an atmosphere of mutual trust and unity. This helps students develop a wholesome and balanced personality, one where academic competence is supplemented with good character.

Distinctive Features

Admissions

- Merit-based open admissions policy for all irrespective of income, religion or region
- Free, high quality education for all students

Residential Character

- Compulsory residential character enabling translation of lessons learnt into practical skills through experiential learning
- Spiritual ambience in an environment of discipline and love
- All doctoral research scholars, students and select teaching faculty reside together in the hostel
- Cultivation of the spirit of self-reliance, brotherhood and sacrifice through mentoring and personal example

Infrastructure

- Campuses set in spacious and peaceful surroundings
- Well equipped, modern science laboratories and cutting edge Research Instruments Facility
- Libraries across campuses with over 2,00,000 volumes
- Computer and Multimedia learning centres with ultra-high speed broadband internet connectivity
- International Centre for Sports and a cricket stadium

Academics & Research

- Over 95% examinations pass rate
- Favourable Student-Teacher Ratio
- Integrated five-year programmes combining undergraduate and postgraduate studies for a systematic and graduated learning process
- Interdisciplinary research for societal benefit
- Awareness Programmes and Moral Classes reinforcing human values

Integral Education

- Life lessons learnt through the message of the Revered Founder Chancellor, Bhagawan Sri Sathya Sai Baba
- Application of what is learned in daily life
- Integrating human values with secular knowledge
- Inculcating the spirit of self-reliance and service to society
- Synthesis of science and spirituality for societal benefit

The concept of integral education that SSSIHL imparts is willingly pursued by all teachers, staff and students.

The Process

The diagram on the right forms the basis of the system of Values-based Integral Education at SSSIHL.

The base is the concept of a modern Gurukula that sustains all relationships and activities at SSSIHL. It is responsible for creating and sustaining the congenial environment necessary for the teacher-student interaction to grow and develop.

Adherence to discipline and appropriate behaviour are the two important aspects that encompass all interactions. The five human values of Truth, Right Conduct, Peace, Love and Non-violence form the undercurrent of all the dimensions of integral education.

These dimensions are: Intellectual, Physical, Cultural, Devotional and Service. The key activities for each of these dimensions form the basis of most of the time that students spend at SSSIHL.

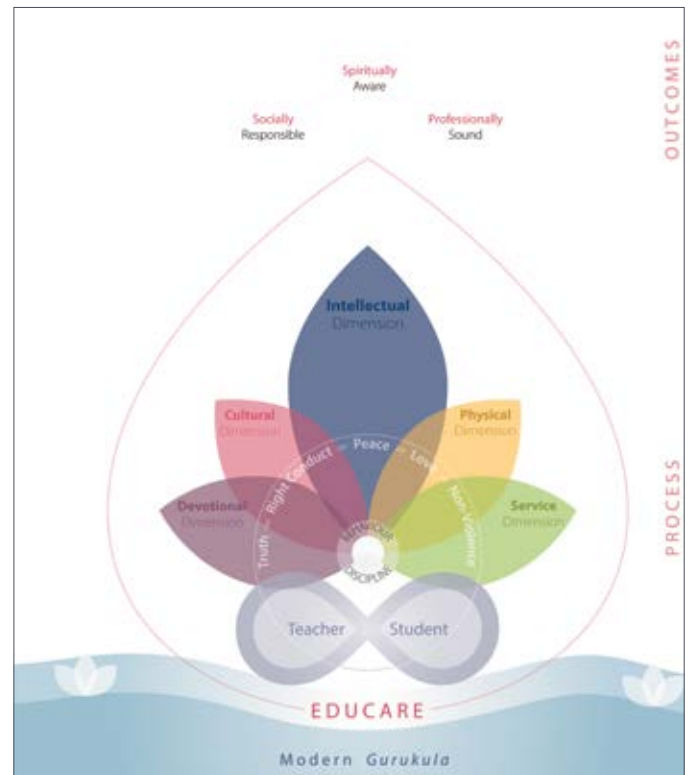
Bhagawan Baba purposefully designed the system of Integral Education so that while students spend 60% of their time on academics (intellectual capacities), they also spend 40% time on the development of other qualities.

(See page 10 for further details)

The Daily Routine

This is a crucial component of this process. Each student's day starts at 5:00 a.m., with a couple of hours spent in prayer, exercise and other vocational pursuits (such as practice sessions for music, band, traditional Indian music and the likes).

Classes commence at 9:00 a.m. After college ends at around 4:00 p.m., students move to the Mandir/Prayer hall for participation in congregational chanting (veda), devotional singing (bhajans) and other spiritual activities. These also include talks by eminent speakers on a variety of spiritual topics. Post dinner, students usually spend time on their studies.



Sri Sathya Sai Values-based Integral Education

The Outcome

The outcomes of the system of Values-based Integral Education at SSSIHL are threefold. It prepares all graduates to be:

- Spiritually aware
- Socially responsible and
- Professionally sound

It helps develop a strong character and positive qualities in students and nurtures virtues like adaptability, tolerance and sacrifice; shaping them into noble and responsible citizens.

I have established these institutions to impart spiritual education as a main component and worldly education as a secondary one. Education should enable one to cultivate good qualities, character and devotion. The teaching of the University curricula is only the means employed for the end, namely, spiritual uplift, self-discovery and social service through love and detachment.

Sri Sathya Sai Baba
Revered Founder Chancellor, SSSIHL

Integral Education Activities

All students at SSSIHL spend 60% of their time at university on intellectual activities (primarily on their studies). The rest (40%) is spent almost equally on activities related to the Integral education dimensions of Devotional, Cultural, Physical and Service, as highlighted below.

Devotional Dimension

- Bhajans (Sankirtan)
- Vedic chants and stotrams
- Meditation & Silent sitting
- Suprabhatam (prayer at dawn)
- Assembly (college prayer)
- Brahmaarpanam (food prayer)
- Kshama Prarthana (night prayer)

The activities of the devotional dimension enable a student to connect to his/her Divine inner Self. This inner connection opens the heart and brings forth the feeling of love, compassion and empathy for fellow human beings.



Cultural Dimension

- Celebration of festivals: Eid-al-Fitr, Independence Day, Christmas, Sri Krishna Janamashtami (cow procession), Ganesh Chaturthi, Ganesh Immersion, Christmas, Ugadi, Sri Ramanavami, etc.
- Brass Band
- Nadaswaram & Panchavadyam ensemble
- Annual Sports & Cultural Meet
- Performing Arts: Music programmes
- Drama & Dance
- Fine Arts: Rangoli, Card making, Photography, Altar making, etc.
- Public Speaking
- Debates and Elocution

From the performing arts to public speaking to the fine arts, the cultural dimension is designed to give students wide opportunities to find an avenue to their individual artistic expression.

The university makes every effort to provide the best possible resources—both material and human—so that students excel at their chosen activity. Festivals of major world religions are celebrated, reinforcing the unity among all faiths. Every student is involved in one way or another in the celebration of these festivals.



Physical Dimension

- Sports
- Games
- Jogging
- Exercises and Yogasanas
- Annual Sports & Cultural Meet

Sports and games are a part of the daily routine of all students. From yoga classes to fitness training, from team sports to individual sports, students are encouraged to overcome their limitations and excel in these activities.

The university has excellent sports facilities.





Service Dimension

- o Self-Reliance departments:
Electricals, Plumbing (water supply), Audiovisual, general store, dispensary, dietary services, hostel mess, arts & crafts, costumes & props, etc.
- o Community living
- o Social Work
- o Voluntary work
- o Community Service
- o Prasadam Distribution

The philosophy of service at SSSIHL is based on the concept that divinity pervades all of humanity, and hence when you serve others, you are serving the Divine. Students learn to serve without expecting anything in return, other than the deep inner satisfaction of serving others.

The compulsory residential system, where students live in dormitory-styled accommodation with other students from totally different backgrounds (for a minimum of two years and up to five years or more), provides an excellent foundation for the service dimension.



Intellectual Dimension

Apart from academics and research, the activities in this dimension include:

Awareness Courses

These mandatory courses are designed to cultivate a broad view of the human condition in students. The course content (e.g. the Unity of Religions and Faiths, Study of the Indian Epics, etc.) helps trigger self-reflection and enquiry and sensitises students to the concerns of society, and gets them to think about practical solutions to these problems.

Thursday Moral Class

At each campus, Thursday mornings begin with an hour of inspiring and ennobling talks by speakers focusing on their personal spiritual experiences, messages from sacred scriptures and other elevated and socially relevant themes. It is also used to highlight students' talents in music, dramatics, elocution, debates, quizzes, etc.

In 2019/20, some of the topics included: The Power of Namasmara, Journey with Sai, Yoga for an effective life, My Beloved Lord, The Power of Intent, Experiences with His Guru & God and Lessons learnt at His Lotus feet.

Prayer Talks

Every morning before classes commence at the college, all students and teachers gather for the morning assembly. Prayers/veda chanting/bhajans and a few minutes of silent sitting are sometimes followed by a talk by students, faculty members or invited guests on topics related to morals and values.

In 2019/20, some of the topics included: Surrender, Procrastination, Forgiveness, Women Empowerment, Live before you Leave, Sai's Test, Acceptance, Mother, Manava Seva to Madhava Seva, Yoga - Need of the hour, Never give up, Lessons from the Master, The Infinity War, Holy Quran, The true Inner Self, Knowledge is Power, How to overcome fear, Expectations and reality, Experiences with Swami and All they want is our Love.



Governance & Structure

Sri Sathya Sai Institute of Higher Learning (Deemed to be University) is an independent and self-governing institution. It was established by the Sri Sathya Sai Institute of Higher Learning (Public Charitable Trust), which in turn has been established by the Sri Sathya Sai Central Trust. Bhagawan Sri Sathya Sai Baba is the founder of these Trusts.

The Trust

The Sri Sathya Sai Institute of Higher Learning (Public Charitable Trust) was founded to foster the culture of India and promote in the students and teachers an awareness and understanding of the social needs of the country; with special focus to the needs of the rural population. It is aimed to inculcate in students a world perspective - an international outlook imbibing human values along with a spiritual and secular education. Its members for 2019/20 were:

- **Justice Sri A P Misra**
Former Judge, Supreme Court of India, Chairman of the Human Right Commission (Uttar Pradesh) and Chairman of Arbitrators by the ICC court in Paris
- **Sri T K K Bhagwat**
Member, Sri Sathya Sai Central Trust, Former Chairman of Indian Overseas Bank and Former Advisor, International Monetary Fund
- **Sri S S Naganand**
Member, Sri Sathya Sai Central Trust, Senior Partner, JustLaw Advocates, Senior Advocate, High Court of India and Supreme Court of India and Former President, International Commission of Jurists (Karnataka section)
- **Sri R J Rathnakar**
Managing Trustee, Sri Sathya Sai Central Trust, Active Social Worker and Alumnus, Sri Sathya Sai Institute of Higher Learning
- **Prof. S P Thyagarajan**
Former Vice-Chancellor, University of Madras, Professor of Eminence & Dean (Research), Sri Ramachandra University and Eminent Microbiologist and Inventor

The Principal Bodies

The administrative and academic functioning of the University is carried out by the following two principal bodies:

- The Board of Management
- The Academic Council

The Board of Management

The Board of Management is the principal authority of the University, responsible for its general management and administration. Its members for 2019/20 were:

- Prof. (Dr.) C B Sanjeevi, Vice-Chancellor, SSSIHL (Chairman)
- Sri S S Naganand, Member, Sri Sathya Sai Central Trust Nominee, SSSIHL (Public Charitable Trust)
- Dr. (Ms.) Renu Swarup, Secretary, Dept. of Biotechnology, Ministry of Science & Technology, Govt. of India

- Prof. D Narasimha Rao, Professor, Dept. of Biochemistry, Indian Institute of Science, Bangalore
- Prof. B Raghavendra Prasad, Senior Professor, Indian Institute of Astrophysics, Bangalore
- Prof. G Nageswara Rao, Head, Dept of Chemistry, SSSIHL
- Prof. R Prabhakara Rao, Professor (Hon.), Dept. of Economics, SSSIHL
- Prof. C N Sundaresan, Dean of Research, SSSIHL
- Dr. (Mrs.) M Praphulla, Dean of Education, SSSIHL
- Prof. B Sai Giridhar, Registrar, SSSIHL (Member Secretary)

In 2019/20, The Board of Management met on 19 November 2019 and 14 April 2020

The Academic Council

The Academic Council is the principal academic body of the University. It has general control over and is responsible for the maintenance of standards of teaching, research and training, approval of syllabus, coordination of research activities, and examinations and tests within the University. Its external members for 2019/20 were:

- Prof. V Nagaraja, Dept. of Microbiology and Cell Biology, Indian Institute of Science, Bangalore
- Prof. S Ramasesha, Solid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore
- Prof. V Nagadevara, Former Professor and Dean, Indian Institute of Management, Bangalore
- Prof. A Ramanan, Dept. of Chemistry, Indian Institute of Technology, Delhi
- Dr. Kamini Walia, Scientist F, Indian Council of Medical Research, New Delhi
- Dr. Anil Dutt Semwal, Scientist G, Director, Defence Food Research Laboratory, Ministry of Defence, Mysore
- Prof. Ratnamala Chatterjee, Dept. of Physics, Indian Institute of Technology, Delhi
- Dr. M Venkateshwar, Formerly Professor and Head, Dept. of Hindi & India Studies, The English and Foreign Languages University, Hyderabad

Committees

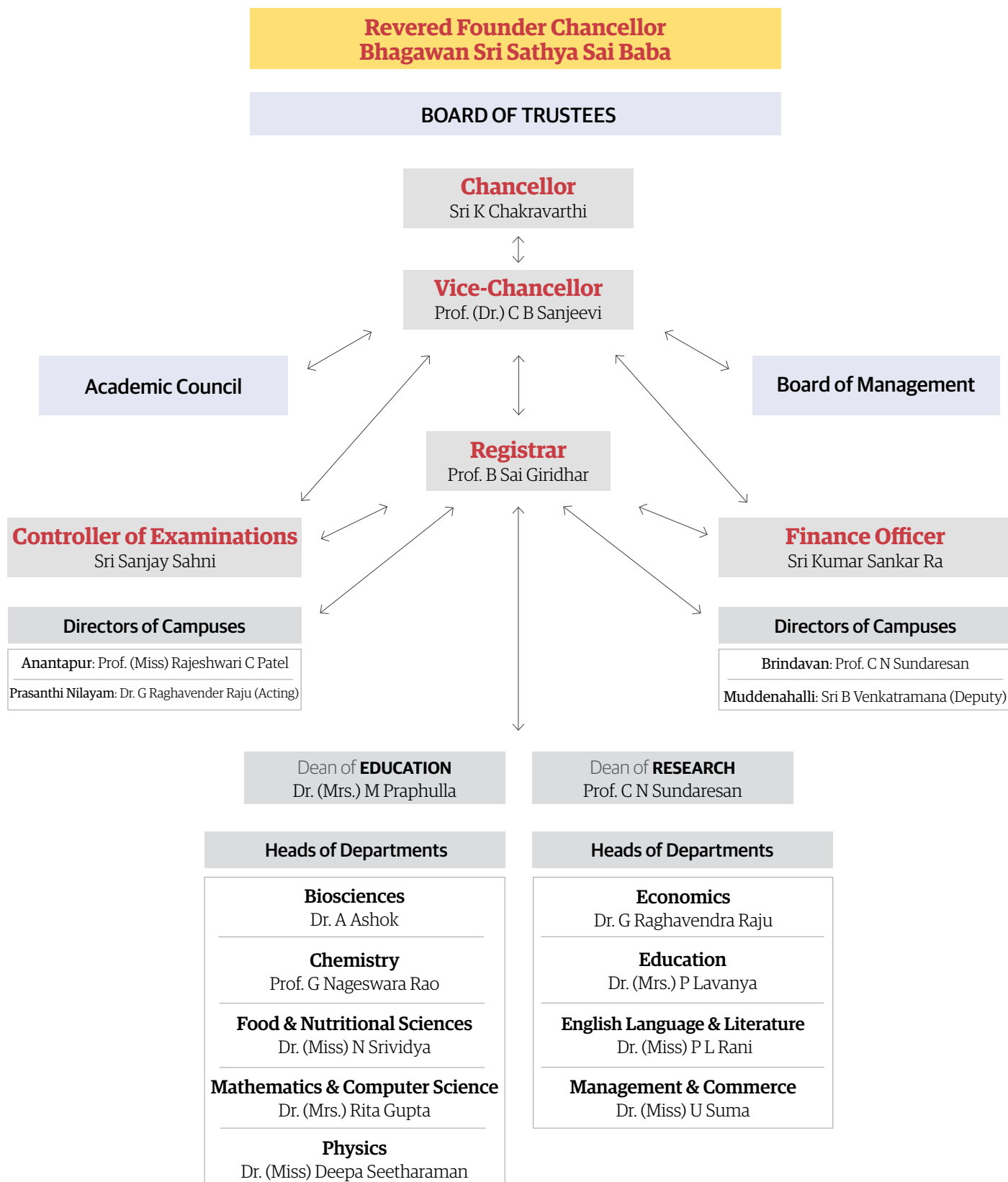
These are set up to ensure the high academic, research and administrative standards that SSSIHL has striven to consistently maintain. They include:

Important: The Boards of Studies, The Finance Committee, Planning and Monitoring Board, Research Advisory Board, Internal Quality Assurance Cell (IQAC), Institutional Ethics Committee, Institutional Biosafety Committee, Research Conferment Cell, Building and Works Committee, and Campus-Hostel Management Committee

Mandatory/Essential: The Anti-Ragging Committee, Anti-Discrimination Cell, Committees for SC/ST/OBC/Minority, Internal Complaints Committee, Intellectual Property Rights Cell and Innovation Cell, Social Media Cell, and Student Counsellor Internal Committee for students with disabilities.

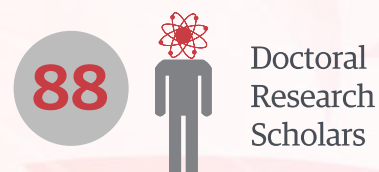
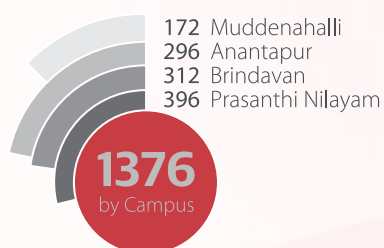
Organizational Chart

Sri Sathya Sai Institute of Higher Learning (Deemed to be University) has been established by Sri Sathya Sai Institute of Higher Learning (Public Charitable Trust), which in turn has been established by Sri Sathya Sai Central Trust.
Bhagawan Sri Sathya Sai Baba is the founder of these Trusts.

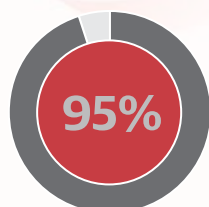


SSSIHL Statistics 2019/20

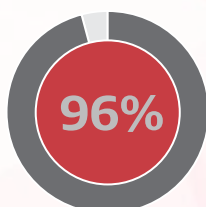
Student Profile



Examinations Pass Rates

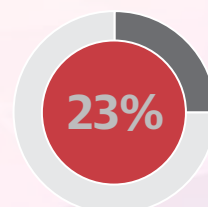


*Undergraduate
Programmes*



*Postgraduate & Professional
Programmes*

National Exams (Combined)



*This data pertains to final year postgraduate
students who attempted these exams
see page 30 for further details*

Admissions



Total Admissions



587/2516
accepted / eligible applicants

Acceptance Rates

Graduates



301

169



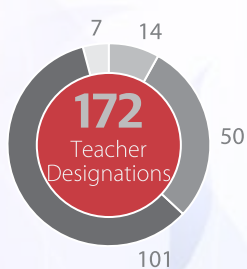
14

6

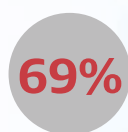
Staff Profile



172 Teachers
57 Administrative Staff
20 Technical Staff
8 Library & Sports



14 Professor
50 Associate Professor
101 Asst. Professor
7 Others



Ph.D.s

118/172 teachers have Ph.D.s
Additionally, 26 teachers are currently pursuing a Ph.D.



Visiting Faculty
& Guest Lecturers



2:1

Student Computer Ratio



8:1

Student Teacher Ratio



Residential Teachers

₹ 3.89
Crore

Expenditure on Equipment
& Infrastructure



Research & Teaching Grants

₹ 1.71
Lakhs

Expenditure
per student / per year

Events

To facilitate wider exposure to the developments in academia and industry and enable the exchange of ideas, the University hosted a number of academic events during the academic year 2019/20 via key guest lectures, workshops and conferences. A sample of these is highlighted below.

Brindavan Campus @ 50: Golden Jubilee Celebrations

8-9 June 2019

The event marked the completion of 50 years of the opening of the Brindavan Campus of the Institute - the erstwhile Sri Sathya Sai Arts, Science and Commerce College for Men - inaugurated by Bhagawan Sri Sathya Sai Baba on 9 June 1969. The two-day event featured talks by luminaries from various Sri Sathya Sai organizations and discourses by the Founder Chancellor (including a special documentary, entitled 'Education for Life'), as well as cultural presentations, felicitation of former staff from Brindavan, spiritual engagement activities, sharing of experiences, blood donation, visit to Sri Sathya Sai Institute of Higher Medical Sciences (SSSIHMS), etc.

Several dignitaries associated with the Sri Sathya Sai Seva Organizations and other Sai education institutions as well as SSSIHL alumni were present on the occasion.

Sri M Venkaiah Naidu, Honourable Vice President of India was the chief guest. He spoke of how, the way Bhagawan Baba has motivated lakhs of people, is an inspiration in itself. He opined on the educational and medical institutions set up by Him being expressions of His ability to motivate individuals.

Advanced NMR applications in solving Biology problems

14 Sep 2019

The workshop for postgraduate and Ph.D. students on the potential applications of Nuclear Magnetic Resonance (NMR) in the fields of chemical, biological, pharmaceutical and medical sciences to help solve complex biology problems introduced various NMR techniques including Basics of Magnetic Resonance, principles of one-dimensional, two-dimensional and three-dimensional NMR spectroscopy, and the like.

External experts and guests from: BITS Pilani, CSIR-The Central Drug Research Institute (CDRI) and Indian Institute of Science

Physics

Virtual Labs

6 Feb 2020

The workshop explored possibilities of how SSSIHL faculty can become content generators for virtual lab experiments. Nineteen faculty members from SSSIHL Science departments across campuses participated.

Virtual Labs is an initiative of the Ministry of Human Resource Development (MHRD), under the National Mission on Education through Information and Communications Technology (ICT), which aims to provide remote-access to labs in various disciplines of Science and Engineering.

External experts and guests from: IIIT Hyderabad

Chemistry

The Periodic Table @150

8 Aug 2019

The event celebrated the nostalgia behind the invention of the periodical table of events - the backbone of Chemistry. This fusion of science and history included historical anecdotes on Russian Chemist and inventor, Dmitri Mendeleev, who formulated the Periodic Law, and his farsighted vision that brought us the Periodic Table.

It explored the beginnings of Chemistry with the alchemist's search for the philosopher's stone to convert base metals into gold, the attempts on finding a relationship between the elements, and the final piece of the puzzle, the arrangement of the periodic table by atomic number and the subsequent discovery of more elements of the periodic table.

External experts and guests from: Tata Institute of Fundamental Research

Disruptive Innovations to Lower Healthcare Costs

30 Jan 2020

The event highlighted the growing cost of healthcare in the United States, costing close to \$4 Trillion per annum, while 71% of world population lives on a \$10 per capita per day income. Under these circumstances, where medicare is beyond the reach of the masses, the Center for Advanced Center Technology (CAST), University of Maryland, USA has developed next generation bio-manufacturing technology

with the ability to manufacture protein-based therapeutics at the point-of-care. The talk centered around the application of non-invasive sensors, minimizing pain and removing infection risks especially for vulnerable infants in neonatal care.

External experts and guests from: University of Maryland, USA

Biosciences

Re-wired Metabolism Drives Breast Cancer

22 Jan 2020

A cancer biology expert focused on how breast cancer modifies its metabolism to escape host immune response and become aggressive (metastatic). The mechanism underpinnings that drive this immune escape was determined. The potential translation of these findings to develop treatment strategies for patients were discussed.

External experts and guests from: Baylor College of Medicine, USA

Symposium on Translational and Advanced Research Technologies (START)

29 Feb 2020

The workshop brought together distinguished professors and scientists in the areas of Biosciences and Medicine. Talks and discussions centered on various topics: The importance of translational research and its applications, Green Chemistry: Plants as a Source of Bioactive Metabolites, Stem Cells: Their scope in Regenerative Research, How do we tackle resurgent drug-resistant Tuberculosis, Pharmaceuticals to Nutraceuticals - Why This Paradigm Shift, Oxylipid signaling in Health and Disease in plants and animals, and Hybridoma Technology in Health Care.

External experts and guests from: North Maharashtra University, National Institute of Nutrition, Indian Institute of Science, Central Food Technological Research Institute, University of Hyderabad, Defence Food Research Laboratory, DRDO

Food and Nutritional Sciences

National Nutrition Week Celebrations - The Health Happy Week

1-7 Sep 2019

The National Nutrition Week, an initiative by The Ministry of Health, Govt. of India, is aimed to address several major health issues in India, such as malnutrition, awareness of a proper diet and nutrition and their positive benefits on people's well-being.



The Dept. of Food & Nutritional Sciences, SSSIHL celebrated this week by designing a nine-code initiative, The Health Happy Week. The nine codes included daily walking, pranayama and yogasanas/exercises, bhajans/meditation/relaxation with music, care of plants, laughter session, avoiding caffeine (tea/coffee) and sugar, and consuming a bowl of salt and vegetables.

The Doctoral Research Scholars spread the awareness of this with posters and information sessions. The sessions also included presentations on how to incorporate the five human values in nutrition: The truth about food, Dharmic perspectives from farm to fork, Cultivating peace through food, Love in action through food banking, and the value of vegetarianism and a plant-based diet.

Management and Commerce

Marketing Simulation - from classroom to the real world

29 Jun 2019

Marketplace® Simulations, a marketing and business simulations designed for university business courses and executive business programs was employed for II M.B.A. students at SSSIHL.

It allowed students to experiment with business strategies, test business ideas, and experience the consequences of their actions in a virtual business environment. The simulation brought to the fore the uncertainty they faced from the outside environment and their own decisions. Along with the theoretical knowledge they learned in class and making strategic and tactical business decisions in the game, they developed skills critical to succeed in today's business world.

External experts and guests from: University of California, Riverside

Honing the art of Analytical and Presentations Skills via the Union Budget

13 Jul 2019

The intensive workshop helped in dissecting the critical focus areas of the 2019/20 Union Budget (or the country's Annual Financial Statement if you like). These included vital parameters like cess and import duties, the interchangeable use of the Aadhaar and PAN cards, the allocation of funds for various sectors from defence to agriculture, the dream of a \$5 trillion Indian economy, et al.

Students presented key highlights and facts via role play,

which were then further discussed and analysed in a panel discussion, that comprised of students from various departments. This was followed by a quiz.

Leadership in Challenging Times

17 Aug 2019

Increasingly, in the current state-of-play, it is difficult for values-based leadership to thrive. In these challenging times, it is therefore crucial that we practice the fundamental principles of leadership. Three key observations were made during this workshop:

Whatever others throw at us, it has no impact on us unless we make it impactful. In all undertakings, more than keeping an eye on the content, it is essential to see the context, since context is the background that colours situations. The next is the importance of relationships and the human connection as a measure of the quality of one's life. The last was integrity: the state of being whole, complete and unimpaired, which is created in us when we honour our word given to ourselves and others.

Mastery is being above what is occurring automatically.

External experts and guests from: Landmark Education

Excellence @ Workplace - The Indian Ethos Way

3 Nov 2019

Increasingly, spirituality and ethics play an important role in organizations worldwide. Responsible business ethics, employee job satisfaction and a wholesome approach to individual and organizational behaviour are not just presentations in classrooms and research papers, but are being actively sought by mindful organizations.

The programme took the participants on an introspective journey through reflection, exercises, talks and discussions on the profound messages from the ancient Indian texts and scriptures that are most relevant to current business practices, and how they can be disseminated to the corporate world in a suitable manner.

From Karma Yoga to Dharma, executives from leading organizations discussed how to bring about greater engagement and satisfaction at the workplace in the process of achieving business goals.

External experts and guests from: Hexagon Wealth Advisors, SimplyFI Softech India, Siemens Technology and

Services, Point Analytics & Business Consulting, Future Generali India Insurance, GE Health Care, Tata Consultancy Services, Sri Sathya Sai Institute of Higher Medical Sciences (SSSIHMS), Mentor Graphics, Al Shaya India, Capital One India, and Titan.

Mental Models

28 Dec 2019

Redefine your model of the world!

This self-analytical workshop enabled students to participate in two activities, left and right-hand column activity, as well as a debate between union and management, that enabled them to analyze their model of the world – thoughts, feelings, actions and results.

The activities helped them identify their preconceived notions and deeply held beliefs and assumptions that come in the way of clarity, effective decision making and actions.

As a result, students gained a deeper understanding of their thoughts and feelings and learned techniques on how to release them. They were empowered to meet personal and professional challenges that come their way by adjusting the view of the problem at hand.

External experts and guests from: Bharat Petroleum Corporation Limited (BPCL)

Corporate Social Responsibility, Cross Border Mergers and Insider Trading

17-18 Jan 2020

A series of lectures on the importance of Corporate Social Responsibility at the individual level stressed on the sense of accountability that each professional must employ, and how the maxim, develop oneself to develop the economy, is a good moral compass to have.

To address Cross Border Mergers and Insider Trading, industry-oriented examples on how increase the visibility of its applications were highlighted. The concepts taught were linked with spirituality, thereby highlighting its importance in work and life.

External experts and guests from: CAS & Associates

Getting Ready for Professional Life in Organisations

Late Jan 2020

The workshop helped final year M.B.A. students recognize the options they have in their work lives and then guide them make the right choice.

The expert trainers made all students take the internationally recognized Myers Briggs Type Indicator (MBTI), a psychometric test that helps identify types of personalities and find ways to use personality differences constructively



to improve personal effectiveness, team performance and manage work relationships better.

Students learnt a lot about their own personalities and strengths, and realized the importance of developing abilities in their non-preferred areas while maintaining their own preferred state.

External experts and guests from: Anahat Organisation Development Consultancy Pvt. Ltd.

Business Excellence

8 Feb 2020

This panel discussion focused on the idea of business excellence and ways to plan, deploy and sustain excellence in Business. Discussions centered on the use of Excellence frameworks, particularly the Malcolm Baldrige and EFQM frameworks.

These framework assist organizations in becoming more competitive by aligning their plans, processes, decisions, people, actions, and results. The latest modifications to these globally adopted frameworks and the key challenges in carrying out an assessment of a business organization were discussed.

External experts and guests from: Transconn International, Confederation of Indian Industry (CII), and a veteran Navy officer with a distinguished record of service to the nation across various fields.

Sustainable Future and Solidarity

March 2020

Students learnt about the Global Ecovillage Network (GEN), which envisions a world of empowered citizens and communities, designing and implementing their own pathways to a sustainable future, and building bridges of hope and international solidarity. They do this by creating self-sustaining human settlements, which are in harmony with all aspects of life, including the cultural, ecological and spiritual dimensions. Several such communities across India and the world are now in existence, through a series of grants and proactive initiatives.

The effort is part of Gaia Trust, a Danish-based charitable association founded in 1987 to help promote a new, global consciousness which sees our entire planet as a living organism with Humankind as an integral part of the entity.

External experts and guests from: Gaia Trust, Denmark

Economics

Recent Developments in India's Monetary Policy

27 Jul 2019

Monetary Policy. The most complex of all macroeconomic processes becomes even more complicated when you apply it to a developing country like India. Supply constraints, underdeveloped financial markets and resource gaps are just some of the challenges involved.

The lecture series addressed this via four key topics: The objectives and overview of India's monetary policy, Understanding Liquidity, Inflation and Interest rates, Emerging Trends in India's Monetary Policy, and the Non Banking Financial Companies (NBFC) crisis.

External experts and guests from: UTI Mutual Fund and Gitam University

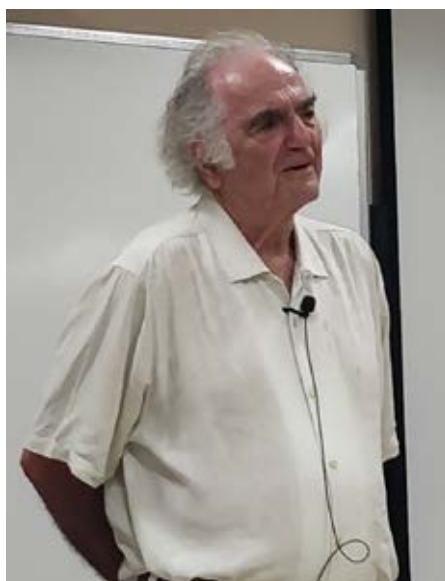
English Language and Literature

Vantage Point - Thought and Task: The Connect

30 Nov 2019

The workshop stressed on the importance of fostering good research approaches, the proper use of information, and tools on how to effectively communicate in this increasingly digital world. This included, for example, fostering intellectual discipline and focus in the current world of 'infobesity' (excessive availability of information), to achieve relevance and authentication.

Other approaches such as the marriage of qualitative research (such as positionality, epistemological, personal & critical reflexivity and reciprocity) and openness, introspection, empathy, objectivity, and deep enquiry; and the importance of communication problem solving, critical thinking, decision making, self-management and continuous updation for better employment opportunities were also delved into.



Achievements & Participation

Faculty

Mathematics and Computer Science

Dr. K S Sridharan

Resource Person, Faculty Development Programme on Machine Learning & Deep Learning and Applications, Dept. of Electronics and Communication Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, 25-26 2019.

Prof. V Chandrasekaran

Resource Person and Invited talk, Faculty Development Programme on Machine Learning & Deep Learning and Applications, Dept. of Electronics and Communication Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, 25-26 2019.

Sri Darshan Gera

Resource person, Faculty Development Programme on Machine Learning & Deep Learning and Applications, Dept. of Electronics and Communication Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, 25-26 2019.

Resource person, Workshop on Recent trends in Machine Learning and Importance of Python Programming, Dept. of Computer Science, Chennai National Arts and Science College, 7 Mar 2020.

Sri V Bhaskaran

Technical Poster on Feasibility Study of an inter-operable data analysis platform for clinical data, accepted at IEEE International Conference on High Performance Computing, Data, and Analytics (HiPC 2019), Pune, 16-19 Dec 2019.

Dr. Ajith Padyana

Mentoring and guiding Atal Tinkering Lab students for their research thinking and innovation in latest trends and technology.

Dr. Pallav Kumar Baruah

Key Note Talk on Set Membership Problem, Workshop on Geo Spatial Technology and its Applications, Dr. Ambedkar Institute of Technology, Bangalore, 28-30 Aug 2019.

Resource Person and three Invited talks, Faculty Development Programme on Machine Learning & Deep Learning and Applications, Dept. of Electronics and Communication Engineering, Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, 25-26 2019.

Resource Person on a Panel Discussion: Fostering Industry Academia Partnership, International Conference on High

Performance Computing, Data, and Analytics (HiPC 2019), Pune, 16-19 Dec 2019.

Attended the 9th IEEE International Advance Computing Conference (IACC 2019), MAM College of Engineering, Tiruchirappalli, Tamil Nadu, 13-14 Dec 2019.

Attended the 2nd Workshop on Education for High Performance Computing (EduHiPC 2019), Hyderabad, 16-17 Dec 2019.

Attended a Faculty Development Programme on Recent Trends in Information Technology, Dept. of Information Technology, Kalasalingam Academy of Research and Education, Krishnankoil, Tamil Nadu, 18-24 May 2020

Attend a #EduTECHAsia Webinar on Education going online, now and for the future, 14 May 2020.

Dr. S Balasubramanian

Second Runner up in Indian Driving Dataset Semantic Segmentation Challenge, Workshop on Recent trends in Machine Learning and Importance of Python Programming, Dept. of Computer Science, Chennai National Arts and Science College, 7 Mar 2020.

Completed an online certification course on Coursera, Introduction to Ordinary Differential Equations, authorized by Korea Advanced Institute of Science and Technology (KAIST).

Dr. Avadhesh Kumar

Awarded a certificate for serving as a Reviewer of Mathematical Methods in the Applied Sciences, an SCI Journal, 2020.

Sri Udhay R Shankar

Attended the 9th IEEE International Advance Computing Conference (IACC 2019), MAM College of Engineering, Tiruchirappalli, Tamil Nadu, 13-14 Dec 2019.

Sri Sapan Gupta

Attended a workshop on R Programming Language, IIT Bombay, 9 Nov 2019.

Physics

Dr. Gowrishankar R

Resource person, Workshop on Effective Teaching Approach to Applied/Engineering Physics, Jawaharlal Nehru Technological University (JNTU), Anantapur, Andhra Pradesh, 5-7 Aug 2019.

External Examiner, Practical Examination for M.Sc. in Electronics and Communications, Dept. of Electronics, Sri Krishnadevaraya University, Anantapur, Andhra Pradesh, 5-6 Dec 2019.

Dr. Murali Ravi

Product Patent filed. CBR Number: 29859 "Small Area Imaging Gamma Camera".

This IP covers all the details of the developed Small field of View Gamma Camera which has the capability to image the organ of interest in Sitting Supine and Lying Supine orientations.

Dr. (Mrs.) Vedavathi Aluri

Completed an online certification course on Udemy, Python for Data Science and Machine Learning Boot-camp.

Attended a workshop on Characterization Techniques, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 7 Dec 2019.

Attended a virtual Faculty Development Programme on Managing Online Classes and co-creating Massive Open Online Courses (MOOCs) 2.0, Teaching Learning College, Ramanujan College (University of Delhi), 18 May - 1 Jun 2020.

Prof. S Siva Sankara Sai

Attended the IEEE International Conference on Advanced Networks and Telecommunications Systems (IEEE-ANTS-2019), Goa, 16-19 Dec 2019.

Dr. (Miss) Deepa Seetharaman

Attended a workshop on Characterization Techniques, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 7 Dec 2019.

Attended a hands-on training course on Calibration, maintenance and use of Simultaneous TGA/DSC Analyzer, TA Instruments Division, Bangalore, 17 Feb 2020.

Dr. (Mrs.) C Prathibha

Attended a workshop on Characterization Techniques, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 7 Dec 2019.

Attended an Elsevier Webinar on Improving Research Planning Skills, Technical Institute, 28 Apr 2020.

Dr. V Sai Muthukumar

Participated in a virtual event on Biophotonics Congress: Biomedical Optics, Optical Society of America, 20-23 April 2020.

Chemistry**Dr. V N Ravi Kishore Vutukuri**

Selected as Honorary Member of the Editorial Board of the International Journal of Biosciences and Technology (IJBST) Journal Group, a Non-profit Peer Reviewed Open Access Journal Group, Nov 2019,

Invited to Resource Generation Camp (RGC) for India's Chemistry Olympiad Program at Homi Bhabha Centre for Science Education (HBCSE), a National Centre of the Tata Institute of Fundamental Research (TIFR), Mumbai, 22-25 Sep 2019.

Dr. (Mrs.) G Pavana Kumari

Invited talk on Stereo Chemistry and Asymmetric Synthesis and Positive Thinking for Students, National Seminar on Emerging Trends in Chemical and Environmental Sciences, Govt. College, Anantapur, 6-7 Feb 2020.

Dr. (Mrs.) V Prathyusha

Attended a virtual Faculty Development Programme on Managing Online Classes and co-creating Massive Open Online Courses (MOOCs) 2.0, Teaching Learning College, Ramanujan College (University of Delhi), 18 May - 1 Jun 2020.

Biosciences**Dr. B E Pradeep**

Invited Speaker at International Symposium on Discovery of Actionable Targets in Infectious Diseases, Yenepoya University, Mangalore, 26 Nov 2019.

Invited speaker at MedTech Innovation day, Re-inventing Drug discovery by digitization & Novel technologies, Jubilant Biosys, Bangalore, 6 Dec 2019.

Invited speaker for the symposium, ESKAPE pathogens, Centre for Infectious Disease Research, Indian Institute of Science, 21 Dec 2019.

Dr. A S Vishwanathan

Resource person for Lifesciences, Regional STEM Teacher Training Workshop on Research Based Pedagogical Tools, in collaboration with Indian Institute of Science Education and Research (IISER), Pune, Oriental University, Indore, 26-28 Jun 2019.

Resource person for Lifesciences, Regional STEM Teacher Training Workshop on Research Based Pedagogical Tools, in collaboration with Indian Institute of Science Education and Research (IISER), Pune, Sir Padampat Singhanian University, Udaipur, Rajasthan, 17-19 Feb 2020.

Dr. S Venketesh

Invited lecture on Metabolic Rewiring promotes Amyloidogenesis in Huntington's disease: Potential Biomarkers and Therapeutic Targets, Recent Trends in Biosciences, St. Peter's Institute of Higher Education and Research, Chennai, 7-8 Aug 2019.

Mrs. B Anusha

Participated in the SAKURA Science Exchange Program (organized by the Government of Japan), Japan Advanced Institute of Science and Technology (JAIST), Nomi, Ishikawa, Japan, 16-25 Aug 2020.

Dr. (Mrs.) Pallavi C

Attended a workshop on Recent Trends in Bioinformatics for Exploratory Analysis of Biological Data, St. Francis College for Women, Hyderabad, 16-18 Jan 2020.

Completed an Online Certification Course, Descriptive Statistics with R Software, The National Programme on Technology Enhanced Learning (NPTEL), May 2020

Dr. Anandkumar K

Participated in a workshop by the International Association of Sai Vibrionics Practitioners, Prasanthi Nilayam, 17-22 Nov 2019, and have qualified as an Associate Vibrionics Practitioner.

Dr. K N Naresh

Attended a webinar on Herbals at Home for Health Management during Covid-19, The Maharaja Sayajirao University of Baroda, Gujarat, 9 May 2020.

Attended a webinar on The Science behind Covid-19, Harvard University, Cambridge, MA, USA, 24 Apr 2020.

Food and Nutritional Sciences**Prof. (Mrs.) B Andallu**

Invited talk on Role of Phytochemicals in Spices in Healthcare, 107th Indian Science Congress, University of Agricultural Sciences, Bangalore, 3-7 Jan 2020.

Attended a webinar and Q&A session on Ayurveda Protection - Health Tips from World Renowned Experts, 30 May 2020.

Dr. (Mrs.) A Sumana

Nominated as a member of the Board of Studies (2019/20 and 2020/21), Dept. of Home Science, KVR Government College for Women, Kurnool, Andhra Pradesh.

Attended a webinar on Innovation & Entrepreneurship Ecosystem in Educational Institutes, SIES College of Arts, Science and Commerce affiliated to University of Mumbai in Collaboration with IITB-DSS School of Entrepreneurship, IIT-B'e-cell and ENACTUS India, Mumbai, 17 May 2020

Attended a webinar on Post Covid-19: Challenges and Opportunities for Indian Food Industry, MOP Vaishnav College for Women, Chennai, 25 May 2020

Attended a webinar and Q&A session on Ayurveda Protection

for the next 100 days - Health tips seeking cure for Covid-19 from World Renowned Ayurveda Experts, New Delhi Institute of Management, 30 May 2020.

Dr. (Mrs.) Ambati Padmaja

Received 3rd place for oral presentation for the paper, Development of instant soup mix from Muntingia calabura fruit, FOODS 2019 - ITAF: International Conference on Innovations and Technological Advances in Food, M O P Vaishnav College for Women, Chennai, 5-6 Aug 2019.

Management and Commerce**Dr. (Mrs.) Swetha Thiruchanuru**

Completed an online certification course, Mindfulness Practitioner Course (Level 1, 2, 3 & Master), Ancient Art of Mindfulness, Academy of Modern Applied Psychology, 20 May 2020.

Attended a webinar on Research Capability Building - a Strategy to promote Research Culture in Higher Education, Bhavan's Vivekananda College of Science, Secunderabad, 12-14 May 2020.

Dr. Sayee Manohar K

Chaired Conference Sessions, National Conference on Turbulence and Triumph in Business Environment (TTBE-2020), Government Arts College, Salem, Tamil Nadu, 29 Jan 2020.

Chaired Conference Sessions, National Conference on Indian Commerce & Industry, Ramakrishna Mission Vivekananda College, Chennai, 28 Feb 2020.

Prof. (Miss) N Niranjana

Resource Person, Faculty Development Programme on The Art of Effective Teaching (online), Excel College for Commerce and Science, Komarapalayam, Tamil Nadu, 14 May 2020 .

Received the Bharat Gaurav Award (conferred by leading lights of the Indian Government every year) for work in the field of Education, New Delhi, 2019.

Dr. G S Srirangarajan

Invited as a Member of the Administrative and Audit Committee, JAIN University, Bangalore, Oct 2019.

Attended the 4th Indian Edition of the Education Innovation Conference, organized by the Economic Policy Group (EPG), Bangalore, 19 Nov 2019.

Sri Vivek Kapoor

Nominated by CCS Haryana Agricultural University to evaluate

their M.B.A. Students (M.B.A. in Agribusiness and General M.B.A. programmes), Jun 2019.

Sri M S Sai Vinod

Attended an online workshop on Scientific Writing for Journals, organized by Springer Nature, 20 May 2020.

Attended a virtual conference on Earth Day Energathon 2020, The Institute of Green Engineers (IGEN), 2 May 2020.

Dr. B Chandrasekhar

Completed an Online Certification Course on Certified Credit Risk Analyst, Association of International Wealth Management of India (AIWMI), Feb-Apr 2020 .

Completed an Online Certification Course on Fixed Income Investing, Association of International Wealth Management of India (AIWMI), 10 Apr - 12 May, 2020

Sri S Sai Manohar

Attended a training programme on Business Analytics, PSG Institute of Management, Coimbatore, 29-30 Aug 2019

Sri Arvind Hejmadi

Attended a webinar on Navigating the Crisis & Beyond: Perspectives for Leaders in South Asia, Harvard Business School, Cambridge, MA, USA, 11 Apr 2020.

Mrs. Akanksha Aggarwal

Attended a workshop on Achieving Excellence in Research Endeavor at PSG Institute of Management, Coimbatore, 14-15 Feb 2020.

Dr. Sanjay Mahalingam

Completed the Business Assessor Program of Confederation of Indian Industry (CII), and provisionally certified as an assessor of organizations using the International EFQM framework, 4-11 May 2020.

Miss Aparna V

Attended a webinar on Academic Research Methodology, Publication and Ethics, AICTE and Elsevier, 28 Apr 2020.

Dr. (Mrs.) C Jayashree

Completed an Online Certification Course, Refresher Course In Commerce, SWAYAM, 1 Sep 2019 - 15 Jan 2020.

Completed an Online Certification Course, Financial Markets & Emerging Business Models, SWAYAM, 15 Oct 2019 - 30 Jan 2020.

Completed an online course, Descriptive Statistics with R Software, The National Programme on Technology Enhanced Learning (NPTEL), May 2020

Attended a virtual Faculty Development Programme on Technology enabled Teaching and Remote Learning, St. Anne's College for Women, Hyderabad, 30 May 2020.

Attended an online workshop on Structural Equation Model (SEM) and Confirmatory Factor Analysis (CFA) using AMOS, Institute for Statistics and Analytical Research (ISAR), 24-25 May 2020.

Economics

Dr. G Raghavender Raju

Peer Reviewer for the Journal, Journal of Economic Policy and Research.

Dr. Gopakumar K U

Faculty advisor for RBI Policy Challenge (a National-level competition). Winners at the State level and South Zone level.

Education

Prof. (Miss) Madhu Kapani

Conferred a Life-Time Achievement Award in the field of Education and Teacher Education by The Indian Association of Teacher Educators (IATE), IATE National Seminar, Ravenshaw University, Cuttack, 27-28 Jan 2020.

Resource person and Invited talk on Social Inclusion, Sustainable Development and Empowerment, The Indian Association of Teacher Educators (IATE), IATE National Seminar, Ravenshaw University, Cuttack, 27-28 Jan 2020

Dr. (Mrs.) P Lavanya

Attended a workshop on Modern Methods for Teaching-Learning Practices, Krishna University, Machilipatnam, Andhra Pradesh, 12-13 May 2020.

Attended a virtual Faculty Development Programme on Managing Online Classes and co-creating Massive Open Online Courses (MOOCs) 2.0, Teaching Learning College, Ramanujan College (University of Delhi), 18 May - 1 Jun 2020.

Mrs. B Saisoujanya Kumari

Attended an online workshop on Research Methodology in Social Sciences, Vasanta College for Women, Varanasi, 17-23 May 2020.

Mrs. P Padmambika

Participated in a webinar on Digital Transformation, Poornima Institute of Engineering and Technology, Rajasthan, 29 May 2020.

English Language and Literature

Dr. Aruna Kumar Behera

Conferred IRDP Group of Journals' Award for Teaching, Research and Publications, Chennai, 23 Feb 2020

Nominated by Management Teachers Consortium Global (MTC Global), for Distinguished Teacher Award, English, 2020.

Miss Sai Archana M

Paper Presentation on Quality of Higher Education and Vocational Preparedness: Bridging the Divide Higher Education in India, Central University of Andhra Pradesh, Anantapur, 11 Nov 2019.

Paper Presentation, National Conference on Changing Classroom Factors: Teachers, Learners and Instructional Environment, English and Foreign Languages University, Hyderabad, 6-7 Jan 2020.

Attended a webinar on Academic Research Methodology, Publication and Ethics, AICTE and Elsevier, 28 Apr 2020.

Dr. (Miss) P L Rani

Attended a symposium on Multiple Perspectives on English Language, Literatures and Theories, Osmania University Centre for International Programme (OUCIP), Hyderabad, 28 Dec 2019.

Dr. (Miss) Dibba Bhargavi, Dr. (Mrs.) Maitali Khanna, Dr. (Miss) Nelli Vani Sri

Attended a symposium on Multiple Perspectives on English Language, Literatures and Theories, Osmania University Centre for International Programme (OUCIP), Hyderabad, 28 Dec 2019.

Miss S Lakshmi Menon

Attended an Elsevier Webinar on Improving Research Planning Skills, Technical Institute, 28 Apr 2020.

Attended a webinar on Future Learners Need Learning Strategies, Cambridge Online Experience, Asia, 20 May 2020.

Dr. (Miss) P L Rani, Dr. Aruna Kumar Behera, Dr. (Miss) Dibba Bhargavi, Dr. (Mrs.) Maitali Khanna, Dr. (Ms.) Vijaya Lekshmi R, Miss Sai Archana M

Attended the Times Litfest Bengaluru, Jayamahall Palace, Bengaluru, 8-9 Feb 2020.

Music

Dr. (Ms.) K Kanaka Durga

Awarded a Ph.D. (Music) on Pedagogical Aspects of Manodharma Sangitam in Karnatic Classical Music, Potti Sreeramulu Telugu University, Hyderabad, Aug 2019.

Sri Prafulla Kumar Meher

Qualified candidate at UGC National Eligibility Test (NET) in Music, Dec 2019.

Sri Raghavendra

Awarded 'B-High' grade by Prasara Bharati, All India Radio under the Hindustani Classical Vocal Music category, 11 Sep 2019.

Awarded 'Grade-2' (B-High) by Prasara Bharati, All India Radio under the Music Composership category, Jan 2020.

Delivered a Solo Performance at the prestigious 85th Akhila Bharatha Kannada Sahitya Sammelana, Kalburgi, Karnataka, 5 Feb 2020.

Received the Lalita Chetana Prashasti award for contribution to the field of Music, 25 Sep 2019.

Sri Nishikant Barodekar

Invited Panelist, Member of External Examination, Dr. Gangubai Hangal Music & Performing Arts University, Mysore, Karnataka, Jan 2020.

Sri S Sai Ram

Invited Talk on Aesthetics in Music and Spirituality, Fifth International Conference on Music and Dance (ICMD) 2020, Indiranagar Sangeet Sabha, Bangalore, 3-8 Jan 2020.

Doctoral Research Scholars

Mathematics and Computer Science

Sri Ananth V S

Selected for Direct Senior Research Fellowship by Council of Scientific and Industrial Research (CSIR).

Sri S R Pranav Sai

Qualified in the Institute of Actuaries of India (IAI) Exams in ACET (Actuarial Common Entrance Test), CS1 (Actuarial Sciences) and CP3 (Communication Practice).

Sri Rohan Yashraj Gupta

Qualified in the Institute of Actuaries of India (IAI) Exams in ACET (Actuarial Common Entrance Test) and CM2 (Financial Engineering and Loss Reserving).

Physics

Miss Anjana Biswas

Attended a workshop on Characterization Techniques, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 7 Dec 2019.

Miss Susshma N

Course on Gamma Ray Spectroscopy, UGC-DAE CSR, Kolkata Centre, 2-13 Dec 2019.

Chemistry

Sri Seemesh Bhaskar

Attended a workshop on Spectroscopic Ellipsometry, Jawaharlal Nehru Centre for Advance Scientific Research (JNCASR), Bangalore, 4 Nov 2019.

Miss Sai Kiran M

Attended the 5th DAE-BRNS National workshop on Materials Chemistry (NWMC-2019) (and recipient of the best answer in the quiz), Manipal University, Jaipur, Rajasthan, 8-9 Nov 2019.

Attended a workshop on Characterization Techniques, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 7 Dec 2019.

Recipient of DST Innovation in Scientific Pursuit for Inspired Research (INSPIRE) Fellowship.

Sri Ram Murthy, Sri Sai Prasad Nayak

Attended a virtual conference on Materials for Energy Harvesting and Catalysis, IISER Kolkata and TIFR Mumbai, 1-3 May 2020.

Miss K V Seetarama Mani Chandrika

Attended a workshop on Computer-Aided Drug design and Computational Biology, Schrodinger Inc., Bangalore, 7-9 Aug 2019.

Attended a Technical Education Quality Improvement Programme on Analytical Techniques, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 7 Dec 2019.

Dr. Chelli Sai Manohar

Conducted a workshop, Recent Trends in Chemistry, St. Xavier's College, Thumba, Kerala, 26-27 Sep 2019.

Miss Amitananda Dash

Completed an internship, Dr. Reddy's Institute of Life Sciences, Hyderabad, 21 Oct - 8 Nov 2019.

Attended a workshop on Characterization Techniques, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 7 Dec 2019.

Sri Undavalli Venkata Gopi

Attended a workshop on Materials For Energy Storage Devices, Jawaharlal Nehru Technological University, Anantapur, Andhra Pradesh, 27-28 Dec 2019.

Qualified for the National-level examination, GATE (All India rank 2805) in Chemistry, 2019.

Biosciences

Sri Balaram Khamari

First Prize in Poster presentation, 5th Annual South Zone Critical Care Conference, Visakhapatnam, Andhra Pradesh, 15-18 Aug 2019.

Sri Pachi Pulusu Chankya

Recipient of ICMR Senior Research Fellowship.

Food and Nutritional Sciences

Miss Ashrita C Haldipur

Attended an online workshop on DNA ligand and protein ligand docking, Qstatix Private Limited, Hyderabad, 17-19 Jul 2019.

Attended an International Symposium on Fats in Maternal and Child Health Nutrition - Indian Context, ICMR - National Institute of Nutrition, Hyderabad, India, 18 Sep 2018.

Miss Manjula Devi Ghoora, Miss Shrijana Rasaily

Attended the 2019 Park AFM Workshop on AFM Working Principles and Applications, Indian Institute of Science, Bangalore, 20-21 Jun 2019.

Miss N Saiharini

Attended a webinar on Improving Research Planning & Writing Skills at Technical Institutes, AICTE for Higher Education, 28 Apr 2020.

Miss Alisha Pradhan

Attended a virtual workshop on Patent searching, Drafting, and filing, Panimalar Institute of Technology, Chennai, 29 May - 2 Jun 2020.

Miss Alisha Pradhan, Miss Sai Sruthi Shree K K, Miss Sai Dharshini S

Qualified for the National-level examination, UGC-NET (LS) in Home Science, 2019.

Management and Commerce**Sri U Pranav**

Attended the 6th Management Doctoral Research Colloquium and VGSOM Research Scholars' Day, IIT Kharagpur, 5-6 Feb 2020.

Attended the Tenth National Level Workshop on Achieving Excellence in Research Endeavour, PSG Institute of Management, Coimbatore, 14-15 Feb 2020.

Miss Padmalalitha T V

Attended the 6th Management Doctoral Research Colloquium and VGSOM Research Scholars' Day, IIT Kharagpur, 5-6 Feb 2020.

Attended the Tenth National Level Workshop on Achieving Excellence in Research Endeavour, PSG Institute of Management, Coimbatore, 14-15 Feb 2020.

Sri Barathram B

Attended a workshop on Advanced Research Methodology, Dr. N G P College of Arts and Science, Coimbatore, Tamil Nadu, 11-13 Dec 2019.

Attended the South Zone Student Research Convention (Anveshan 2020), Bharathidasan University, Tiruchirapalli, Tamil Nadu, 21-22 Jan 2020.

English Language & Literature**Miss Umadevi V S**

Completed a 12-week National Programme on Technology Enhanced Learning (NPTEL) Online Certificate course, Indian Fiction in English, conducted by the Indian Institute of Technology, Madras.

Sakura Science Exchange Programme

Japan Advanced Institute of Science and Technology, Japan

Anusha B, K V Seetarama Mani Chandrika, Ashritha C Haldipur, Anjana Biswas, Chelli Sai Manohar, Swayamsiddha Kar, Ranjan Rai, Roshan Rai, Sai Prasad Nayak, V N S Malleswara Kota D

As part of prestigious SAKURA Science Exchange Program organized by the Japan Government, eight Doctoral Research Scholars and two teachers (from the Departments of Physics, Chemistry, Biosciences and Food & Nutritional Sciences, SSSIHL) visited Japan Advanced Institute of Science and Technology (JAIST), in the Ishikawa Prefecture, Japan from 16 to 26 August 2019.

This year's research focused on Sustainable Materials. A host of six professors at JAIST exposed SSSIHL researchers to the systematic protocols of research, engaged them in discussions (at the mentor group's journal clubs), and trained the team in various advanced synthesis, characterization and applications undertaken at JAIST.

The various techniques picked up ranged from computational simulation to experimental hands-on work. The visit yielded a good amount of collaborations, ideas and a couple of publications in peer-reviewed journals.



Students

Organizational Visits

At the end of each academic year, final year graduating students from various departments go on official visits to reputed organizations to get a feel of how what they learn in the classroom is applied in the real world. Students are accompanied by a few faculty members on these trips.

During the academic year 2019/20, these included:

Management & Commerce

Prasanthi Nilayam Campus:

I M.B.A. students, Anekal, Karnataka and Bangalore, 15-16 Dec 2019

Organizations visited: Sai Vishram Business Hotel and Srinivasan Services Trust (SST). This included villages adopted by SST for inclusive development.

I M.B.A. students, Anantapur, 29 Dec 2019.

Organizations visited: Rural development and self-employment Training Institute (RUDSETI), Anantapur, Andhra Pradesh.

Prasanthi Nilayam Campus:

I M.B.A. students, Bangalore, Karnataka & Hosur, Tamil Nadu, 17-18 Sep 2019

Organizations visited: GE Healthcare, Times of India and TVS Motors

I M.B.A. students, Anekal, Karnataka and Bangalore, 17-18 Dec 2019

Organizations visited: Sai Vishram Business Hotel and Srinivasan Services Trust (SST). This included villages adopted by SST for inclusive development.

II B.B.A. students, Bangalore, 17 Feb 2020

Organizations visited: Volvo Construction Equipment

Physics

Prasanthi Nilayam Campus:

M.Sc. in Physics and M.Tech. in Optoelectronics & Communications students, 10 Feb 2020

Organizations visited: Geological Survey of India (GSI), Sri Sathya Sai Airport, Puttaparthi.



National Examinations

A high percentage of SSSIHL final year postgraduate students qualified in national exams such as the GATE/JEST or the CSIR-UGC NET in 2019/20. The list below includes the national rank for each exam.

Ajay Mukund S (Computer Science)

(GATE) 13948 (CSIR UGC-NET for JRF) UGC-NET (LS)

Rishi Sridhar Rao (Computer Science)

(GATE) 8249

Mahendrakar Vaibhav (Physics)

(GATE) 261 (JEST) 11

R Sai Santhosh (Physics)

(GATE) 587

M Venkatesh Prasad Sagar (Physics)

(GATE) 798

Sai Krishna N (Physics)

(GATE) 1221

Malhar Anupam Nagar (Physics)

(GATE) 1361

Josyula Sai Prashanth (Physics)

(GATE) 1610

Nithishkumar C V (Physics)

(GATE) 1928

Damagatla Sai Vamshi Krishna (Physics)

(GATE)

Ankush Kumar Gupta (Physics)

(GATE) 3730

Jasa Ranjan Podh (Life Sciences & Life Sciences XL)

(GATE) 568 (CSIR UGC-NET for JRF) 85

Vasudeva Tati (Life Sciences XL)

(GATE) 787

Ayushman (Life Sciences)

(CSIR UGC-NET for JRF) 59

Sunirmala Sahoo (Life Sciences (XL) & Life Sciences)

(GATE) 161 (CSIR UGC-NET for JRF) 59

Kodam Pradeep (Life Sciences)

(GATE) 2307 (CSIR UGC-NET for JRF) 56

Srihari M (Life Sciences)

(GATE) 4610 (CSIR UGC-NET for JRF) 70

Rage Narmada (Home Science)

UGC-NET (LS)

Sparsh Sumnirom Subba (Home Science)

UGC-NET (LS)

Ashish Salamatani (Commerce)

UGC-NET (LS)

Tank Aditya Nitin (Tourism Administration & Management)

UGC-NET (LS)

G Venkata Asrith Bharadwaja (Management)

UGC-NET (LS)

Sai Venkata Sitaram Vandanapu (Management)

UGC-NET (LS)

R Sai Naveen (Management)

UGC-NET (LS)

Pokuri Sai Punitha (Management)

UGC-NET (LS)

Kurup Unninarayanan Sreenivasan (Economics)

UGC-NET (JRF)

Rohit Kumar Rajak (Economics)

UGC-NET (LS)

Nimesh Subba (Economics)

UGC-NET (LS)

Malepati Sudheshna (Education)

CTET

Petla Kalyani (Education)

CTET

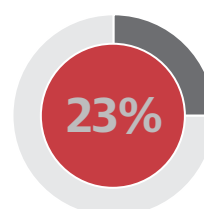
Sairema T (English)

UGC-NET (LS)

National Examination types

GATE (Graduate Aptitude Test in Engineering) | **CSIR** (Council of Scientific & Industrial Research) | **JRF** (Junior Research Fellowship) | **NET** (National Eligibility Test) | **LS** (Lectureship) | **JEST** (Joint Entrance Screening Test) | **CTET** (Central Teacher Eligibility Test)

National Exams (Combined)



GATE: 26% | CSIR UGC-NET for JRF: 10% | UGC-NET (JRF): 3% | UGC-NET (LS): 17% | JEST: 6% | CTET: 50%

This data pertains to final year postgraduate students who attempted these exams

Other National Examinations

In addition, students of various M.Sc. programmes at the Dept. of Mathematics & Computer Science who were eligible to take the Institute of Actuaries of India national and international examinations, and qualified, are mentioned below:

Bishal Gupta (IAI)

(CM2)

Vasa Manideep (IAI)

(ACET)

Aman Sharma (IAI)

(CS1)

Mariyala Naga Teja (IAI)

(ACET)

Yagnyeswar Satapathy (IAI)

(ACET)

Sai Suraj K Bhasker (IAI)

(CB3)

Institute of Actuaries of India (IAI) Exams:

ACET (Actuarial Common Entrance Test)

CB3 (Business Management)

CM2 (Financial Engineering and Loss Reserving)

CP3 (Communication Practice)

CP2 (Modelling Practice)

CS1 (Actuarial Sciences)

DS1 (Data Concepts and Visualization)

Projects & Dissertations

Listed below are the topics / areas of postgraduate and professional programme projects and dissertations for the academic year 2019/20.

Mathematics & Computer Science

M.Sc. in Mathematics

Review of Mathematical Modelling of Hansen's (Leprosy) Disease: Questions Unanswered - The Road Ahead, A Study on Outlier Detection Methods, Shortest Path Algorithm for Large Graphs, Generative Adversarial Networks, Study of loss functions for Face recognition, Database Design for Rheumatoid Arthritis Disease

M.Sc. in Data Science & Computing

Robotic Process Automation through Lokibots, Classification of Respiratory Diseases, Music Recommendations (Sai Bhajans) Service, Analytics and Intelligence in Healthcare Informatics

M.Tech. in Computer Science

A Study of Certain Motion Estimation Algorithms, Automatic detection and extraction of information from scanned documents, Predictive Analytics in Health Care, Smart HBasechainDB, Fraud Detection on Motor Vehicle Insurance Industry Using Apache Spark - Machine Learning, AI in Sports: Analyzing the run-up and delivery action of a fast bowler, Dynamic Detection and Mitigation of Meltdown, A Real-time Scalable Recommender System using Collaborative Filtering and NLP Techniques, Dynamic Detection and Mitigation of Spectre Attacks, Human Detection in Low Resolution Thermal Image Sequences, Interpretable capsule networks, A Spectral Domain Based Extension of Convolution to Graph-Structured Data and its applications to Semi-Supervised and Supervised Learning, Face Verification on Labeled Faces in the Wild using Different Mini Batch Mining Strategies, User Controlled In-Memory Cache Layer, Dynamic Detection and Mitigation of Spectre Attacks, Detection and Dynamic Mitigation of Meltdown, Evoting using Hyperledger Fabric Blockchain, Human detection in low resolution thermal image sequences, AI in sports - Analyzing the run up and delivery action of a fast bowler

B.C.A.

Wish Tree, a platform to Q and A, Email Service for Inhouse Requirements, Optical Character Recognition, Online Chess, IoT based LED Light Pattern, IoT based Mobile, IoT based Robotic Car, Fingerprint Sensor Authentication

Physics

M.Sc. in Physics

Gamma Irradiation Studies on Lead-Free Piezoelectric Polymer-Ceramic Composites, Study of Coffee-ring Patterns from Droplets of Clay Particle Suspensions, Investigations on the Structure of 24Mg Ground State and Low Lying Energy levels of 256Es, Time Resolved Third Order Nonlinear Optical Susceptibility Measurements Using Femtosecond Degenerate Four Wave Mixing: Automation and Analysis, Design and optimization of a Collimator for a Novel PET system using GATE Simulation Toolkit, Thermoelectric Properties of Quaternary Heusler Alloy RuZrTiAl, Towards Middle Ear Diagnostics using Low-Cost Optical Coherence Tomography, Luminescent Borate Glasses for Multifunctional Applications, Synthesis and Characterization of $\text{Li}_{1.3}\text{Al}_{0.3}\text{Ti}_{1.7-x}\text{Zr}_x(\text{PO}_4)_3$ solid electrolytes for all solid-state Li-ion Batteries, Investigation of Nonlinear Optical Properties of PVDF-DAST Polymer Composite, Automation of Nonlinear Optical Properties Measurement Setups

M.Tech. in Optoelectronics & Communications

Reactive Wavelength tuning based Defragmentation Algorithm for Enhanced Spectrum Efficiency in Elastic Optical Networks, An Intent Based Smart Road Traffic Management System Using Software Defined Networking, Secure Transport of Medical Data from Edge Gateway to Host, Machine Learning Based Detection of DoS Attacks on Routers

Chemistry

M.Sc. in Chemistry

Formulation of Efflux Pump Inhibitor loaded Liposomes and Study of their Antibacterial Properties on Resistant Bacterial Strains, Valorization of Green Waste: Synthesis of Carbon Supported Ruthenium Nanoparticles, Synthesis of 4-Nitrochalcone Derivatives and Investigation of their Non-linear Optical Properties, Silver Nanoprism Synthesis for Tunable Plasmon-coupled Emission Enhancements and Assessment of Thyroid Dysfunction, Synthesis of Soret Colloids of Silver Nanocomposites for Augmented Plasmon-coupled Emission Enhancements and Accelerated Dye Reduction

Biosciences

M.Sc. in Biosciences

Comparative Analysis of the Protein Sequences of Various PDE Isoforms in PDE Superfamily, Identification of the Location of the Signature Sequence Motif in Various PDE Structures, Optimization of Physical and Nutritional Parameters for Efficient Cellulase production from Soil Cellulolytic Bacteria, Studies on the role of Nitro-reductases among clinically isolated Nitrofurantoin Resistant Bacterial Pathogens, Analysis

of Efflux-pump mediated antibiotic resistance among clinical *Acinetobacter baumannii* isolates, A Study on Relationship between Biofilm producing Genes and Antibiotic Resistance among Clinical Isolates of *Pseudomonas Aeruginosa* Treating Water using Plant based Coagulants and Disinfectants, In silico Analysis of Anti-bacterial and Immunomodulatory Potential of Secondary Metabolites from *Ganoderma* sp.: A Molecular Docking Approach, Diphenol-sensing Potential of Immobilized Hemocyanin: A Microplate based Photometric Study, Effect of C60 - Fullerenes on the Structure of Hemocyanin: An in silico study using Molecular Dynamics Simulations and Molecular Docking, Unbiased Screening for Glycolysis and TCA cycle Metabolic Pathways in Huntingtin Aggregate Formation using Yeast as a Model System, A Study on Hyper-metabolism associated with Familial forms of Amyotrophic Lateral Sclerosis in special reference to FUS and SOD, Unbiased Screening for Fructose, Mannose and Methane Metabolism in Huntingtin Aggregates Formation using Yeast as a Model System, Study the Role of Mitophagy Pathway in Amyloid Aggregation in Huntington's Disease by Unbiased Screening of Yeast Ko Library, A Study on Hyper-metabolism associated with Familial forms of Amyotrophic Lateral Sclerosis in special reference to TAR DNA binding protein-43 and C9orf72, Phytochemical Screening and Anti diabetic Potential of Ethyl acetate subfractions of *Trachyspermum ammi* Linn. Aerial parts

Food & Nutritional Sciences

M.Sc. in Food & Nutritional Sciences

Formulation and evaluation of foods for eye health, Characterization of dietary fiber and antioxidants from vegetable waste and utilization in foods, Formulation and characterization of ice cream with plant-based milk substitutes, Development, nutritional analysis and shelf life of 'Nutri Bar', Formulation and evaluation of plant-based ergogenic foods for young women athletes

Management & Commerce

M.B.A.

A study of the Social Media Marketing Strategies in the Indian Non-profit scenario, A study of Digital Marketing Strategies through the lens of three key players - The Consumer, The Company and the Consultant, Second hand Markets - A Consumer Perspective, Enhancing the Transparency of the Seed Supply Chain through Blockchain Technology, Smart Management of Operations using IoT solutions, Talent Acquisition: Efficacy of Recruitment Process, Digitalisation of HR: Digitalisation in Workplace - Impact on Employee Engagement, Learning Organisation: A Key Driver of Employee Engagement (with special reference to CMA CCGM Shared service centre, Chennai), A Study of Millennial Consumer Behaviour with reference to Fast Food and Street Food of

Hyderabad, A Study of Select Crisis Management Response in Business Organizations, Marketing of Event Management Services in India - A broad study, Study of Railway Employee Satisfaction of Bangalore Railway Division of South Western Railway, Corporate Financial Distress prediction of select Indian steel companies using logit and probit model techniques, Lean Six Sigma intervention for knowledge Management at the Dept. of Management & Commerce, SSSIHL, Measuring Patient satisfaction in Healthcare services using the SERVQUAL instrument, A Longitudinal Study of Continuous Improvement in SSSIHL, Employee Satisfaction in Higher Educational Institutions in India, Competitive Advantage through Supply Chain Management in the Indian E-Commerce Sector, Design of a Strategic Dashboard for Sri Sathya Sai Institute of Higher Medical Sciences, A Study of Consumer Attitudes towards paying for Music Streaming in India, Study on Resilience, Risk Tolerance and Investment Behaviour, Application of Blockchain in Retail trading in the Indian Stock Exchange, A Study on Mutual Fund as an Investment Vehicle for an Individual Investor, A Study of Non-performing Assets in the selected Private sector Banks, Application of Blockchain and RPA for Smart Management of KYC, A Study on Eco-Conscious Consumption Behaviour - with Special Reference to Millennials, Equity Analysis of Airline Industry, Develop Expansion strategies for a Bakery Startup in Moradabad, Study of Value Disciplines for Market Leadership for attaining the vision of a Quick Service Restaurant - Udupi Ruchi Café, Develop Business Model for a unique Pre-School, Multifocal study of the Regional Connectivity Scheme in India, Study of the IPL Business Model and Developing Alternate Auction Models for the IPL Players, Digital Marketing Strategies for Graamam - An Organic Soap Brand from Proto Village, A Study of Business Models for Superfoods Startup in India, Sustainable Rural Development through Education: A Case Study of Narsimpalli Village, Designing Business Model for Social Enterprises in Rural Health Care Sector, A Study of Digital Business Model for s Small Scale Enterprise: Case Study J.S. Processor, Rural Development through Market Linkage: A Case Study of Nimmalakuntha Village

Economics

M.A. in Economics

Determinants of Commercial Bank Credit and its impact on Economic Growth, Short term Migration in India: Determinants and impact of Educational Attainment, An Impact of Financial Schemes on Catastrophic Health Expenditure: A Panel Study, Analysis of External Debt: A Time Series Study on India, Multifractal Analysis of Equities: Evidence from the International Banking Sector, A Study on Impact of Derivatives in the Indian Stock Market Volatility, Analysis of Price Policy in Indian Agriculture, Determinants of Environmental Degradation: An Empirical Analysis of India, Blockchain and Cryptocurrencies: An Analysis of Bitcoin, Analysis of the Sustainability of India's Current Account Deficit

English Language & Literature

M.A. in English Language and Literature

Water and Man's Myriad Moods: A Theme-based Study of Selected Water Poems, A Pilgrimage Towards Truth and Beauty through Goodness: A Study of Selected Short Stories of Rabindranath Tagore

Central Research Instruments Facility (CRIF)

SSSIHL Central Research Instruments Facility (CRIF), Based at the Prasanthi Nilayam Campus, is one of the few such facilities in the country (and the first in a rural location) that houses advanced Characterization/ Analytical tools to carry out Translational Research in various areas of Science and Technology such as Physical, Biological, Chemical, Materials Science, Food and also Computational and Interdisciplinary Areas.

A Ph.D. is a person who helps others through his research and develops the country.

Sri Sathya Sai Baba
Revered Founder Chancellor, SSSIHL

The facility, built with a funding of ₹45 crore with the kind support of Sri Sathya Sai Central Trust, hosts a range of cutting-edge instruments and laboratories as listed here. It has significantly strengthen the research facilities at SSSIHL by providing state-of-the-art infrastructural facilities under a single roof.

This has allowed faculty and postgraduate and doctoral students at the Institute to accelerate their research work in all the major research areas of the Faculty of Sciences - Health, Energy and Environment. It enables them to keep pace with the scientific developments taking place globally, and as a result, their research findings are being published in peer reviewed high impact journals. These concerted efforts to carry out research in cutting edge areas of Science and Technology helps contribute to the needs of society at large.

Full-time technical assistants with specific expertise operate and maintain the instruments and laboratories. SSSIHL CRIF facilitates the strengthening of interdisciplinary health related research collaborations between SSSIHL and Sri Sathya Sai Institute of Higher Medical Sciences (SSSIHMS). Some of these include: Regenerative Medicine & Tissue Engineering, Rapid Detection of Endemic Diseases, Diabetic Retinopathy, Development of Cost Effective Multi-Modal Microscopes, SPCE-based Point of Care Devices, etc.

Core Facilities

The following core facilities at CRIF are shared resources offering a range of services to the research community at SSSIHL:

- Femto Fab Facility
- Electron Microscope Facility
- NMR & Mass Spectrometry Facilities
- Materials Characterization Facility
- Thermal and Optical Characterization Facilities
- Liquid Nitrogen Facility
- Central Utilities Facility
- Optical Imaging and Integration

Laboratories

In addition, CRIF hosts the following labs:

- Wet Chemistry Laboratories
- Functional Materials Laboratory
- Water Research and Electrochemistry
- Bio-Safety Laboratories: Level 1 and Level 2
- Functional Glasses and Ceramics Laboratory
- Non-linear Optics Laboratory
- Computational Science and Plasmonics



Collaborators

SSSIHL has successfully forged several research collaborations with leading organizations across India and abroad.

Academia & Research

- ICAR-Indian Institute of Horticultural Research, Bangalore
- Indian Institute of Technology, Madras and Kharagpur
- FDA-Center for Biologics Evaluation and Research, USA
- Indian Institute of Science Education and Research, Mohali
- Indira Gandhi Centre for Atomic Research, Kalpakkam
- University of Maryland, USA
- The Institute of Bioinformatics and Applied Biotechnology, Bangalore
- Raman Research Institute, Bangalore
- New Jersey Institute of Technology, USA
- Tata Institute for Fundamental Research, Mumbai
- Madras Diabetes Research Foundation, Chennai
- Clemson University, USA
- Geological Survey of India, Hyderabad
- Indian Institute of Science, Bangalore
- Universidad del Norte, Colombia
- National Institute of Nutrition, Hyderabad
- The Sahlgrenska University Hospital, Sweden
- Baylor College of Medicine, USA
- CSIR-National Chemical Laboratory, Pune
- University of Wollongong, Australia
- University of Colorado, USA
- International Centre for Genetic Engineering and Biotechnology, New Delhi
- National Institute of Pharmaceutical Education & Research, Hyderabad
- Japan Advanced Institute of Science and Technology, Japan
- CSIR-Indian Institute of Chemical Technology, Hyderabad
- Institute for Photonics and Nanotechnologies, Italy
- Dr. Reddy's Institute of Life Sciences, Hyderabad
- Central Leprosy Teaching and Research Institute, Chennai
- Centre for Materials for Electronics Technology, Pune
- CSIR-Central Drug Research Institute, Lucknow
- International Center for Genetic Engineering & Biotechnology, New Delhi
- National Animal Resource Facility for Biomedical Research, Hyderabad
- CSIR-Central Electro Chemical Research Institute, Karaikudi

Industry

- Grey Scientific Laboratories, Visakapatnam
- Agilent Technologies India Pvt. Ltd.
- Amara Raja Batteries Pvt. Ltd., Tirupati
- Twastrix, Pune
- LightMotif Automation Sensors and Systems Pvt. Ltd., Hyderabad
- Omix Research & Diagnostics Laboratories Pvt. Ltd., Bangalore
- Lab Engineers, Bangalore
- Labby Inc., USA
- Insta Power Ltd., New Delhi
- Symrise Pvt. Ltd., Chennai
- Indras Pvt. Ltd., Hyderabad
- Syngene international Ltd., Bangalore
- Mylan Laboratories, Bangalore



SSSIHL COVID-19 Research

Researchers at SSSIHL have been working – both indigenously and with healthcare partnerships – on a number of areas to better understand the coronavirus (COVID-19) in an effort to find solutions that will protect our communities and offer expert advice to the local and national government.

Rapid Testing Platform

STAR Labs (SSSIHL Central Research Instruments Facility), under the SSSIHL-CSR Fund, is working on reliable testing platforms, based on plasmonics, towards the detection of COVID-19 antigen in nasopharyngeal swabs / saliva samples and COVID-19 antibodies in blood / serum / plasma samples. The test times for this platform is expected to be within a few minutes. The sensitive plasmonic platform will translate into point-of-care technologies with detection limits that are significantly better than currently available testing platforms. These indigenously developed technologies with the core competency of lower reagent usage, economically viability and shorter test times will aid in scaling up of the current screening/testing rates to serve one and all.

Invivo Mathematical Modeling of COVID-19

The COVID-19 pandemic has affected over 212 countries and territories. Well-designed drugs and vaccines for the elimination of this virus is the need of the hour. Various drug interventions, such as Arbidol, Remdesivir, Inteferon, Ritonavir/ Lopinavir, Hydroxychloroquine (HCQ), BCG Vaccine, etc. – acting at multiple stages of pathogenesis of COVID-19 – can substantially reduce the mortality rates. We performed within-host mathematical modeling studies to understand the efficacy of these drug interventions and the role of crucial inflammatory mediators, and the behaviour of immune response towards this novel coronavirus. Our models identified different combinations of antiviral drugs to reduce the viral load and eliminate the infection. We also observed that combining HCQ and the BCG vaccination resulted in prevention of viral replication and activated innate immunity to eliminate virus from the host.

Drug Repurposing, Natural Products & Derivatives

Drug Repurposing

Nitrogen based compounds such as pyrazoles, pyrimidines, quinolines, and other phytochemical constituents from many medicinal plants and herbs have gained interest due to their potent medicinal values, especially anti-viral properties. In order to utilize these chemical entities, researchers performed in silico studies involving molecular docking and molecular dynamics of the drugs derived from the aforementioned sources against the COVID-19 virus in entry, replication and innate immune response stages in order to identify the potential candidates.

Natural Products

Bio-active constituents present in many medicinal plants that are known to possess anti-viral activity will be studied. They will be first subjected to the computational studies in order to assess their probable efficacy. Once the potential of their activity is established against the COVID-19 virus, we aim to isolate and characterize the active components from the plants and study their properties in vitro to verify the claims.

Semi-synthetic Derivatives

Once the bio-active components of the medicinal plants are isolated and studied, we aim to carry out synthetic modifications to the active component, thus making further derivatives which

will help us obtain a structure-activity based lead optimization. This in turn will help us increase the efficacy of the compounds. After the in vitro studies, the lead compounds will be taken up for further in vivo studies.

Synthetic Derivatives

There are a library of compounds that have been synthesized by us. These include novel spirobenzopyrans, benzopyrylium salts, azines, coumarins, chalcones, bis-chalcones, etc. We aim to explore the in vitro potency of these molecules against the COVID-19 virus. Depending on results, further actions, which include lead optimization based on the structure-activity relationship and in vivo studies, will be undertaken.

COVID-19 protease dual-inhibitors

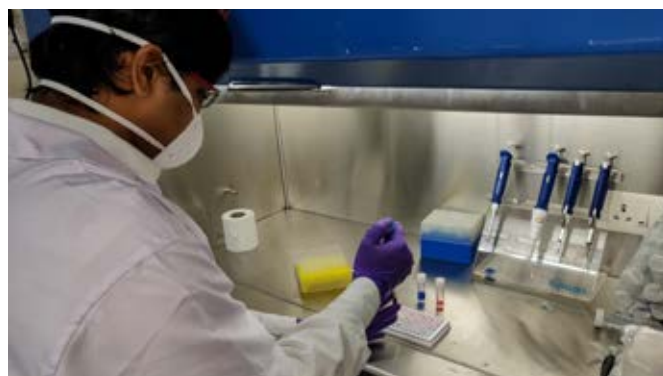
Proteases of SARS-CoV-2 (3CLp and PLp) play an important role in its life cycle, making them ideal targets for drugs. One of the main problems with respect to identifying an inhibitor, is the capability of the virus to mutate, making it a necessity, to search for molecules that are capable of inhibiting both the proteases. This is achieved by the construction of a common pharmacophore model that defines the characteristic features of the pocket and the attributes of the ligand that make it a probable dual-inhibitor. Various databases of drugs and natural products were screened based on this model, and the best hits were subjected to molecular dynamics simulations.

Data Mining

At the time of publication, the global case-fatality rate of COVID-19 worldwide was 3.3%, but only 1.7% in India (Source: WHO). A theory on this is that the environmental temperature in India is on the higher side in comparison to the European continent (for example), and how this might influence case-fatality rate in COVID-19. We are investigating this aspect in our research. COVID-19 related data released by public health agencies, along with sources of data reported in quality worldwide media, will be leveraged to mine knowledge and identify patterns and themes related to the disease.

Teaching during the Pandemic - Best Practices

School closures has impeded learning everywhere. International organizations like the UNICEF have recommended that educational institutions plan and evolve alternative modes of learning to ensure continuity. The research seeks to study and graft best practices of resilient schools that have successfully navigated the crisis and ensured continuity of learning onto select experiment schools. The practices to be examined span the spectrum of learning activities in school education, from content delivery to evaluation.



Research Areas

The strong research environment at SSSIHL has led to high quality need-based research, focused on societal benefit, across all disciplines.

Sciences

Differential and Fourier Analysis

Global problems of hyperbolic equations are addressed using new metrics and their associated pseudo-differential calculus. New identities for partial fractions of cyclotomic polynomials are derived. The identities are applied to several problems in the area of partition of numbers. Further, using Fourier analysis, the Fourier-Dedekind sums and the associated reciprocity theorems are generalized.

Studies on controllability of various kinds of differential equations with instantaneous as well as non-instantaneous impulses in abstract spaces is carried out. The research focus is to get insight into the different types of controllability, existence, and stability of solutions of fractional differential equations. For example, existence and uniqueness of solutions for Caputo-Hadamard fractional differential equation with impulsive boundary conditions is attempted.

Studies related to qualitative properties of solutions of generalized higher order systems ordinary differential equations is in progress. Conditions guaranteeing solutions of such systems with certain asymptotic properties are being worked out.

The classical cubic spline does not give appropriate solutions if the non-homogeneous differential equation involves a continuous function that is not differentiable. Since the classical cubic spline is a particular case of fractal spline, a method to solve the two-point BVPs using the cubic spline FIFs through moments is proposed.

Fractal interpolation is a modern and advance tool to analyze various scientific and natural data that are non-smooth in nature. We proposed a new family of C1-rational cubic trigonometric fractal interpolation functions (RCTFIFs) that are the generalized fractal versions of the classical rational cubic trigonometric polynomial spline to analyze different shape preserving properties of a given data.

Mathematical Modelling

Studies on the within-host modelling of COVID-19 with respect to crucial inflammatory mediators and efficacy of multiple drug interventions at specific sites of pathogenesis are in progress.

An optimal drug regimen for treating COVID-19 based on combined therapy is being proposed. Also, research is carried out on ecological models with specific applications to pest control and biological conservation. For example, additional food supplements as a tool for biological conservation of Predator-Prey Systems was studied extensively.

Domination in graphs is one of the interesting and fastest growing areas in Graph Theory in terms of both theory and applications. The current research involves a theoretical approach of finding the bounds of domination parameters and their respective separation problems with pawns on chessboard graphs.

The work was carried out on few domination parameters like perfect domination and independent domination on different shaped boards like square and hexagon. Independence separation with pawns on rectangular boards and hexagonal boards was done. The total number of solutions and fundamentals solutions for the queens' independence separation on an $m \times n$ board were found using python programming.

Artificial Intelligence (AI) and Actuarial Techniques

A framework integrating both AI and Actuarial Techniques was proposed and the fraud detection model was developed using the Gradient Boosting Method. The results obtained were quite promising with the F1-Score of 98.05% and an accuracy of 99.68%. The results were validated using extreme value theory (EVT), an actuarial technique. Initially, the model was developed for motor insurance and later the same was customized for health insurance.

Neural networks with two fully connected layers were used for analyzing and predicting the factors that were used for calculating the Key Performance Indicators (KPIs). The KPIs were obtained for the projected factors and the inference was done for five different non-life insurers in India, based on the public disclosure data available with insurance supervisors.

Machine and Deep Learning

Deep learning (DL) paradigm has become a major driving force in AI with its wings spread everywhere. However, DL models are mostly black-box models that are not interpretable or explainable. A lot of research is focused on interpretability and explainability of DL models. Focus is on capsule networks, a DL architecture that seems to have in it the capability of being interpretable, but still unexplored. First steps are taken to propose an equivariant capsule network architecture called SOVNet that preserves the compositional representation of an input under transformations.

We also work on face recognition/verification in the lensless environment. Due to the success of computational imaging along with recent advances in computer vision and machine learning, low cost and miniature size lensless cameras can be integrated into smart devices like smart glasses, IOT, drones, etc. However, the quality of images produced by such cameras are way inferior to the standard lens-based ones. We have developed a face verification algorithm that works on such low-quality images from lensless environment and attained reasonable accuracy.

Healthcare Data Analytics

A feasibility study on the Automatic conversion of EHR to SNOMED CT standards has been completed. The results demonstrate the utility of such tools. The work has led us to investigate and evaluate various Graph Frameworks for the efficient execution of Text Analytics on Healthcare Data (obtained from Sri Sathya Sai Institute of Highed Medical Sciences (SSSIHMS), Whitefield).

It has been a challenge in recent times to monitor and evaluate the performance of gigantic social security schemes that also involves crucial financial decision making at different levels. The focus is on an innovative framework that combines data mining strategies with actuarial techniques to evaluate one of the popular schemes

in India - Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY) - launched by the Government in 2018 at the family level.

Small Area Imaging Gamma Camera (SAI-GC)

In collaboration with medical doctors, researchers have created a breakthrough technology to invent a portable, cost-effective and high resolution Gamma Camera system - SAI-GC - for small organ imaging including non-invasive cancer imaging.

The gamma camera is an imaging technique used to carry out functional scans of the mammary, thyroid, kidneys and bone, to identify any defects. Gamma scan is a diagnostic test in nuclear medicine, where radioisotopes are attached to drugs that travel internally to a specific organ or tissue, and the emitted gamma radiation is captured by gamma cameras to form images, a process similar to the capture of x-ray images, but with the additional advantage of providing the functional information of the organ.

This project of ₹92 lakhs, was funded by Department of Science and Technology (DST), Government of India. The prototype has passed the requirements with clinical validation on all the 32 subjects that were part of the study.

Clinical trials in thyroid scanning were conducted at Healthcare Global Enterprises (HCG) Ltd., a healthcare organization headquartered in Bangalore specializing in Cancer imaging, with positive results.

When it comes to market, this device (which offers superior imaging capabilities) will cost almost 8-10 times less than existing large field of view gamma cameras. It will help in identifying ailments related to thyroid, mammary glands, bone hotspots, sentinel lymph node abnormalities and excision for millions of people who currently cannot afford such medical care. The invention is covered by a patent.

In India alone, it is estimated that 42 million people suffer from thyroid diseases. Early diagnosis and treatment remain the cornerstone of medical management.

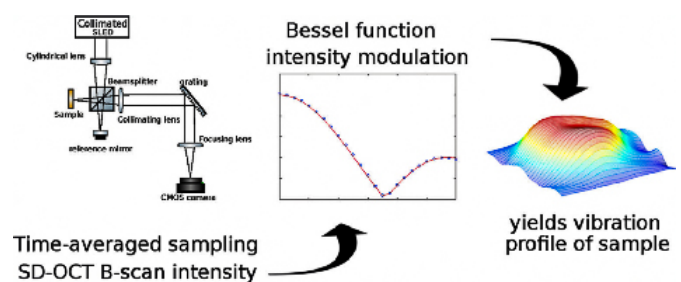
Based on the results of this successful project, an additional project of about ₹1.08 crores has been granted by the Dept. of Atomic Energy, Board of Research in Nuclear Sciences (DAE-BRNS), Govt. of India to the research group of faculty members of the Dept. of Physics, to make a fully handheld product for Sentinel

Lymph Node Navigation surgery. The Proposed instrument will aid the surgeon in the operation theatre.

Optical Coherence Tomography (OCT)

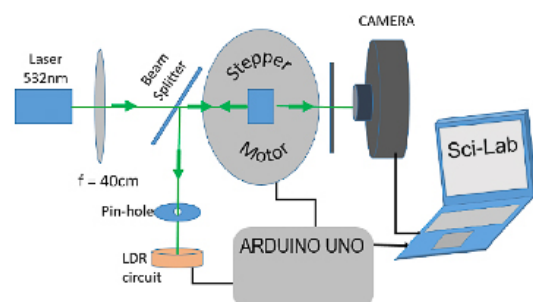
A new technique for vibrometry using Optical Coherence Tomography (OCT) was recently proposed. It demonstrated the use of low-cost cameras for sensing multiple inner layer vibrations of few-picometer amplitudes, unrestricted by the Nyquist limit. The proof of principle demo was published in Elsevier's Optics and lasers in engineering.

Until now, such sensing of inner layers required very expensive components due to the restrictions imposed by the Nyquist criterion and was limited to few kilohertz frequencies. The Photonics group is now working on applying this to low cost, non-invasive, middle ear diagnostics. A prototype OCT instrument has been built for the same, and research is underway to miniaturize it.



Photonics Research

Researchers have created a semi-automated time resolved third order nonlinear dynamics characterization set up, utilizing degenerate four wave mixing, with a 300 femtosecond Ytterbium doped fiber laser. Third order nonlinear optical properties of new organic materials require accurate refractive index measurements, and for this purpose, a fully automated refractive index (R.I) measurement device prototype was constructed, and tested as part of a postgraduate thesis. The set-up uses a GUI based SCILAB-ARDUINO interface to automatically align the optics and uses the lateral displacement of a laser beam, on a CMOS sensor, after it passes obliquely through a cuvette containing the liquid. The table top prototype achieves a third decimal accuracy in R.I measurements. Novel chalcone derivatives were characterized using the set-up.



Non-linear optics

A novel resonant fiber optical gyroscope was recently proposed and the proof-of-principle demonstrated. The fiber optic gyroscope is already an advanced industry that caters to satellite and aircraft navigation, defence as well as other navigational systems. The proposed technique has the potential to lower the cost while maintaining performance using innovative ideas. A new beat frequency version of this gyroscope, that has potential in the tactical grade gyroscope industry, was recently proposed and published in the optical society of America's Applied Optics.

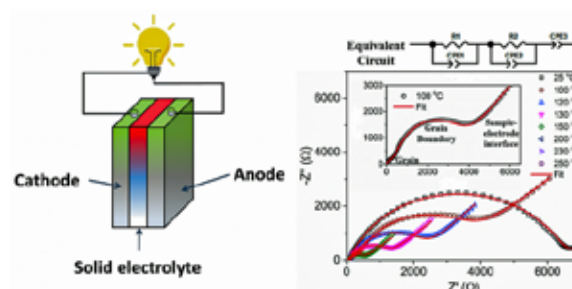
Functional Materials and Composites (for piezoelectric, magnetic, thermoelectric and sensor based applications)

Novel Piezo-resistive polymer nanocrystal composites that could be used for sensor and transducer applications with superior performance were designed and fabricated. High electrical energy storage density was achieved in materials using Ferroelectric fillers in functional polymer matrices along with low dimensional carbon nanostructures. Clay blended polymer nanocrystal composite films were fabricated and found to show enhanced Photorefractive properties. These films could be used as passive optical components utilizing their intrinsic nonlinear optical response.

Electronic structure calculations using density functional theory and the calculation of band structure dependent thermoelectric transport properties using the semiclassical Boltzmann transport theory were carried out in Full Heusler and Half Heusler alloys, Quaternary chalcogenides and Brownmillerites.

Simple ion-exchange method was used to grow metal nanocrystals in silicate and borate glass matrices. Silver (Ag), copper (Cu) and their binary, Ag-Cu nanocrystals were embedded successfully in glass matrices. The nonisothermal crystallization kinetic studies on Ag-ion exchanged silicate glasses have been carried out using differential thermal analyses (DTA). In order to understand the nuclear radiation effect on lead-free functional materials and their polymer composites, lead-free piezoelectric micro rods and their PVDF composites were prepared. Glasses, glass-nanocrystal composites and polymer composites are prepared for gas sensing applications. Highly dense (>7 g/cc) and transparent binary bismuth borate glasses were prepared and their gamma ray shielding properties were investigated. The gamma radiation shielding of transparent bismuth borate glasses was close to metallic lead and other lead-based glasses. Coffee-ring effect by different clay colloidal systems was investigated.

Tin doped nanomagnetites, $\text{Sn}_x\text{Fe}_{3-x}\text{O}_4$ were synthesized with various concentrations of Sn^{2+} by co-precipitation method. XRD, VSM, TG-DTA, SEM-EDX and UV-Vis were used to characterize the structural, magnetic, thermal, and optical properties of $\text{Sn}_x\text{Fe}_{3-x}\text{O}_4$ nanoparticles. The M-H curves exhibited changes in saturation magnetization, coercive field, remanent magnetization and susceptibility, with increasing concentration of non-magnetic Sn^{2+} ions. The optical bandgap measurement of 3.9 eV classifies these materials to be semiconductors. Being magnetic and non-toxic, these nanomaterials can be used in medical, data and energy storage, magnetic sensors and contaminant removal.

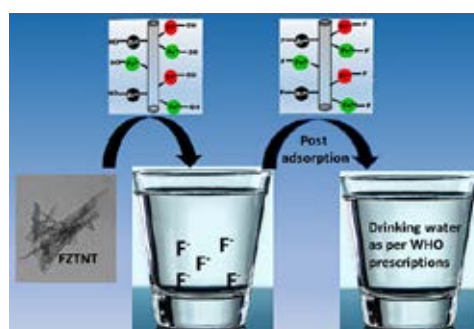


Materials for Energy Research

The vision of this group is to fabricate new materials related to energy harvesting and storage and to develop a fundamental understanding in creating a pathway for future energy technologies. With the increasing need for cost-efficient methods for energy storage and conversion, it has become essential to accelerate the rate at which energy-related materials are developed. Batteries are devices that can convert chemical energy into electric energy. At present we are focusing on the fabrication and characterization of solid-electrolytes for Li-ion batteries. It is very likely that solid lithium-ion batteries, which contain solid electrolyte that conducts lithium ions, will overcome the major safety problems (such as dendrite growth, leakage, and flammability) of the widely used lithium-ion batteries. The introduction of solid electrolytes could enhance gravimetric energy density by 40 per cent, and volumetric energy density by 70 per cent.

Nanomaterials for Environmental Remediation

Nanopowder of Fe (III) and Zr (IV) surface functionalized Titanate Nanotubes (FZTNT) is synthesized for efficient removal of hazardous contaminant, fluoride from water. FZTNT developed in our laboratory is able to remove 95% of fluoride from very high levels of fluoride containing water within a short duration of time at neutral pH. The developed material is tested with several groundwater samples collected from villages of Anantapur District of Andhra Pradesh where the University is situated. It was possible to reduce the high fluoride concentrations (of the collected ground water samples) to safe levels as prescribed by WHO (1.5 mg/L) using as low a dose of 3g/L of FZTNT within 5 minutes of its contact with fluoride contaminated water. In addition, its reusability for three consecutive adsorption cycles without a significant drop in its fluoride removal efficiency, paves the way for scaling up the technology to develop an efficient fluoride water filter.



Point of Care Devices for Clinical Use

As a part of the ongoing projects on perinatal depression, neonatal jaundice, early detection of cardiac malfunction and dengue detection, more than 700 patients from Sri Sathya Sai General Hospital (SSSGH), Prasanthi Nilayam, Sri Sathya Sai Institute of Higher Medical Sciences (SSSIHMS), Prasanthigram and SSSIHMS, Whitefield have been enrolled. The blood, saliva and urine samples from these patients were collected after obtaining informed consent. These samples were processed and stored appropriately. These samples were analysed using standard hospital protocol/equipment and gold standard- HPLC to know the actual value to be compared with that from our proposed devices.

Dengue and heart disease detection devices underwent testing of their alpha models. The feedback was noted and appropriate modifications have been implemented in the fabrication of the beta version. The neonatal device was deployed at SSSGH, Prasanthi Nilayam for field trials. The device for monitoring depression is under fabrication and is planned to be deployed for field trials by the end of this year. In addition, new novel materials for SPCE emission enhancements were studied and the mobile phone-SPCE platform was optimized for the detection of Tannic acid in water sources. Simple, candle soot-based fractal nano carbon islands were coated and shown to be better spacer layers than other nanomaterials that are less eco-friendly due to their synthesis protocol.

Work on novel materials, such as photonic crystals and soret nanoparticle assemblies for the detection of femtomolar aluminum ions, spermidine, iodide & glutathione and zeptomolar cortisol, is also underway.

Synthesis of Small Molecules with Potent Biological Activity

Natural products have afforded a rich source of compounds and made a huge contribution to human health.

Andrographis paniculata is an Ayurvedic herb known as Kalmegh (Nelavemu in Telugu). Andrographolide, the main constituent of Andrographis paniculata and its analogues, possess anti-cancer, anti-inflammatory, anti-bacterial, anti-diabetic, anti-HIV, FXR antagonists and hepato-protective properties. In this regard we have synthesized a number of derivatives of andrographolide and extensively studied their anti-cancer properties. Further studies are under progress, as we found that Andrographolide possesses very good anti-venom properties through PLA2 inhibition.

Spirobibenzopyrans and pyrilium salts are two classes of novel synthetic compounds explored extensively by us. A library of over sixty compounds have been synthesized and characterized for various biological properties. They were found to have potent anti-cancer, anti-inflammatory, anti-bacterial and anti-venom properties as first in class therapeutic agents.

Azole antifungals, commonly known as conazoles, have been used for the topical treatment of superficial fungal infections and oral treatment of deep mycoses. In the current work, a series of oxiconazole analogs are being synthesized with chromones as the core moiety and modified azole rings as the substituents.

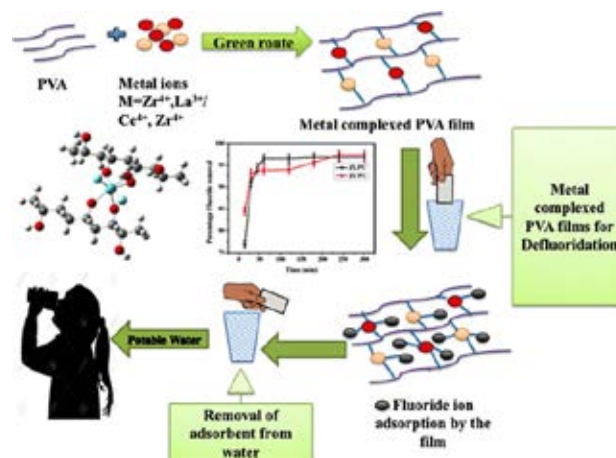
Biological activity (antifungal and antibacterial activity) of the synthesized compounds is being investigated. Molecular docking studies of the synthesized compounds against lanosterol-14-demethylase are being done to understand the mechanism of inhibition.

Chromones are well-known for their ability to scavenge hydroxyl radicals, superoxide anion radicals and lipid peroxy-radicals, which are important for prevention of diseases associated with an oxidative damage of membranes, proteins and DNA. One step synthesis of novel chromone compounds having basic flavonoid skeleton using aldol condensation was done.

Selective Fluoride Removal by Metal Ion Complexed Polymer Films

User-friendly and biodegradable, Zirconium-Lanthanum (ZLPC) and Zirconium- Cerium (ZCPC) complexed polyvinyl alcohol (PVA) films were synthesized for effective defluoridation of water. These films adsorbed 95-97% fluoride from water at pH 7, with 85% removal by ZLPC and 93% removal by ZCPC within the first 45 minutes of the adsorption process. Ab-initio calculations were performed to understand the mechanism of adsorption. The films were reusable and showed ~85% removal of fluoride even after the fifth regeneration cycle. These handy films have a scope to be developed into a prototype for defluoridation of ground water.

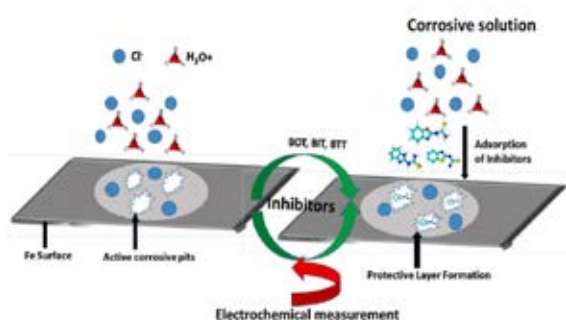
Moreover, polymer blend-metal ion cross-linked composites of polyvinyl alcohol with polyethylene glycol, polyvinyl pyrrolidone, polyethyleneimine and polyacrylic acid have also shown promising results, which could be used as a water filtration membrane due to its water permeability. The composites based on PVA-polymer blends with Zirconium ion showed maximum adsorption of 99% fluoride in the pH range of 5 to 7. The composites could be utilized to design and develop promising defluoridating device for the fluoride endemic villages of the Rayalaseema region of Andhra Pradesh, India.



Environment: Anti-Corrosion Studies

The effects of thioureidobenzheteroazoles, namely 2-thioureidobenzoxazole (BOT), 2-thioureidobenzimidazole (BIT), 2-thioureidobenzothiazole (BTT) and isoperthiocyanic acid derivatives on the corrosion behaviour of mild steel in 2.0 M solution of HCl have been investigated by electrochemical

and quantum chemical methods. Based on these findings, 2-thioureidobenzheteroazoles were found to exhibit very good corrosion inhibitory characteristics. Quantum chemical calculations revealed that sulphur and nitrogen heteroatoms serve as reactive centres for the adsorption of inhibitors.



Computational Investigation of Adsorption of Metal Ions on Biopolymers

A comparative study on the adsorption of metal ions on naturally occurring polymers, chitin, chitosan and cellulose has been done computationally. Desalination of seawater has been explored as a useful alternative to solve the problem of shortage of freshwater. 93.5% of the dissolved salts are constituted by Na, K, Mg, Ca, Br, S and Cl. Here, a theoretical investigation of biopolymers, chitosan, chitin and cellulose, as potential adsorbents of alkali and alkali earth metal ions has been carried out using Density Functional Theory (DFT) calculations.

Synthesis of Novel Chemosensors for Sensing Applications

Considerable attention has been focused on the design of chemosensors which have the ability to selectively recognize and sense analytes through the naked eye, electrochemical, and optical responses. The present research work is focused on design and synthesis of some chemosensors for sensing harmful anions such as fluoride and cyanide and some toxic metal ions in aqueous media. Water soluble curcumin glycoside was synthesized and the aluminium complex of curcumin glycoside was used for fluoride ion detection in water. The present detection concept is further explored to develop a low cost, reusable F-detection kit, which showed its ability to detect Fluoride ions in aqueous medium at a very low concentration. Several derivatives of 2-benzoxazolylimino thiazolidinone were synthesized for sensing toxic metal ions such as mercury, cadmium, lead, etc.

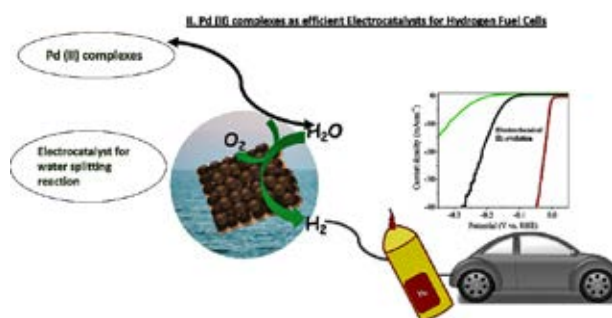
Nanomaterials for Electro Catalytic Applications

Electrocatalysis by nanomaterials and nanocomposites has generated immense research interest as they exhibit very high surface area and unique electron conducting ability. Our research work focuses on the synthesis of novel nanocomposites for application as electrochemical sensors and fuel cells. Several silver and gold based nanocomposites were synthesised and used for electrochemical detection of neurotransmitters such as dopamine and serotonin and also the interfering molecules like uric acid and ascorbic acid. Novel gold and palladium based nanocomposites

have been synthesised and used as electro catalysts that can oxidize methanol and ethanol and reduce hydrogen ions to release energy. Apart from that, we are also investigating oxygen evolution reaction and oxygen reduction reaction that would enhance the sluggish kinetics in Li-ion cells.

Metal Complexes for Hydrogen Fuel Cell Applications

Researchers have shown great deal of attention on transition metal complexes with varying ligands due to their potential uses as catalysts, biological processes and inorganic materials. In this context, hydrogen as the future energy currency is widely considered as the solution to the energy crisis. Metal ions can be framed in special position by using appropriate ligands. In the current study, the electrocatalytic behaviour of palladium (II) metal complexes of sulphur based ligands have been investigated for efficient hydrogen evolution reaction (HER).



Disease Biology

Avascular necrosis of the femur head (AVNHF) is a disease of the bone leading to collapse of femoral head necessitating total hip replacement. Our analysis has shown a clear association of homocysteine with the disease as demonstrated by its correlation with histopathology and biophysical parameters as well as IHC. AVNHF bone showed iron accumulation and iron inhibited stem cell differentiation to osteoblasts as well as mineralization (bone formation) by stem cell differentiated osteoblasts. Our work could eventually pave the way for developing homocysteine reduction therapy and localized iron chelation therapy to manage the disease. We observed similar deregulation of iron metabolism in Perthes disease, a rare condition occurring at childhood. It is essentially version of AVNHF.

Rheumatoid arthritis (RA) is a disease of the joints which leads to death of cartilage, promotes proliferation of synoviocytes and differentiation of macrophages to osteoclasts. Our experiments showed inflammation and metabolic changes in patient's cohort. High levels of ADA enzyme caused death of cartilage, proliferation of synoviocytes and differentiation of macrophages to osteoclasts (bone degrading cells) in vitro. Based on these findings we propose ADA induced joint remodeling in RA might be bringing about inflammation and metabolic remodeling.

Huntington's disease and ALS are two important neurodegenerative diseases associated with amyloidogenesis

(formation of protein aggregates). Clinical data as well as metabolomic analysis showed metabolic deregulation that could be correlated with structural changes (Atrophy) in affected regions of the brain. Metabolic addition experiments revealed that various metabolites modulate protein aggregation; and restoration of normal metabolism influences clearance of aggregates. Taken together, our results demonstrate that these metabolites could be potential modifiers of the disease; and a diet-based approach may be employed to manage the disease. We have also screened medicinal plants used in traditional Ayurveda, Tibetan and Chinese medicine for treating neurodegenerative diseases in terms of their ability to clear amyloid aggregates successfully.

Multiple sclerosis (MS) is a demyelinating neurodegenerative disease, where the myelin coating on neuronal axons is degraded. TNF α , an inflammatory cytokine is elevated in MS patients. Anti-TNF α -antibody treatment is a standard line of treatment for the disease, which incidentally is very expensive. We have shown that TNF α induced inflammation is dependent on certain receptors (P2X7, P2Y12 and P2Y6). Curprison mice model of MS treated with Clopidogrel (a widely used blood thinner) which is a P2Y12 inhibitor showed metabolic profile similar to controls and reduced demyelination. Clopidogrel could emerge as a potential therapeutic agent in MS.

Glaucoma is the second leading cause of blindness after cataract. POAG affects 70% of the glaucoma affected population. Exfoliation syndrome (XFN) is a risk factor for exfoliation glaucoma (XFG) a secondary form of glaucoma. Although 50% of XFN develops into XFG, there are no predictive biomarkers. Elevated Intra Ocular Pressure (IOP) and ATP are associated with glaucoma. Targeted metabolomic analysis showed 58 metabolites were significantly different on comparison between XFN and XFG. Some of the metabolites includes those from tryptophan-kynurenine pathway. Microglia which are immune cells of brain when treated with ATP staged an inflammatory response and expressed genes in the tryptophan-kynurenine pathway as well as in metabolic remodeling involving metabolites from the tryptophan-kynurenine pathway.

Over all, the results point in the direction of ATP mediated microglial inflammatory response and metabolic remodeling involving kynurenine pathway in the development and progression of glaucoma. These metabolites might emerge as potential biomarkers to predict disease progression as well as candidates therapeutic targeting. POAG targeted metabolomic analysis showed changes in about 25 metabolites. Dimethyl arginine (DMAG) an inhibitor of nitric oxide synthase (NOS) was found to be elevated in aqueous humor. N9 microglial cells treated with DMAG showed elevated levels of extracellular ATP, upregulating expression of many P2 receptors and expression of genes in kynurenine pathway. It appears that NOS inhibition might be critical for bringing about increased IOP, extracellular ATP, inflammation and progression of POAG. Metabolomic analysis of PACG was carried out and ELISA results showed elevated levels of TNF α , IFN γ and TGF β . The key outcome was providing plausible explanations to the role of TNF α in microglial inflammation and mechanism involved in manifestation of inflammation leading to retinal ganglion cell death.

A Prospective Multi-center Study to Develop an Antibiotic Resistance Prediction Model Supporting Empirical Antibiotic Therapy

SSSIHL has teamed up with Tech Mahindra Ltd. to develop and launch a clinically useful artificial intelligence backed antibiotic resistance prediction model for urinary tract infections (UTI). Seven major hospitals located in Andhra Pradesh, Karnataka and Tamil Nadu are supporting the project with samples and have agreed to field test the final model in real time clinical setting.

The unique feature of the model is that it does not require any additional invasive investigations and uses patient's clinical history only. The model is intended to augment empirical antibiotic prescriptions to battle the menace of antibiotic resistance.

This work is supported by Biotechnology Industry Research Assistance council (BIRAC), Govt. of India under the PACE (promoting academic research conversion to enterprise) - CRS (Contract Research scheme) format.



Agar art: 'Unity of faith' was shortlisted among the top 50 in the world for the Agar art contest 2019 conducted by the American society of microbiology (ASM). The agar plate is made of two concentric circles with different bacterial growth media and bacteria growing on them. The outer circle is MacConkey agar, which is a differential and selective media. It allows only certain bacteria to grow on it. The different religions are represented by *E. coli*. The inner circle is LB agar media, which doesn't differentiate between any bacteria growing on it and allows everyone to grow equally. *Staphylococcus aureus* is the bacteria cultured in the centre representing the stupa.

Expression Profiling of Circulatory microRNA in a Subset of the Indian Population with Early-onset Coronary Artery Disease (CAD)

Coronary artery disease (CAD) has assumed epidemic proportions in India. Over the last two decades, its incidence has increased by four times, and fatalities due to CAD have doubled. In the last decade or so, there has been an alarming increase in the number of patients dying of heart attack even below forty years of age thereby

imposing a huge stress on healthcare infrastructure and great economic burden on the family and the society at large.

The proposed work aims to explore the utility of microRNAs as potential novel biomarkers for the prediction of early-onset Coronary Artery Disease in different subsets of the Indian population. This multi-centric study includes patients with varied demographic characteristics from diverse geographical locations. The principle objective is to develop a reliable and cost-effective diagnostic assay to ascertain the patient's risk status. The prognostic potential of these novel biomarkers would also be evaluated.

Edible or Medicinally Active Natural Products

Study on wild edible mushrooms of Andhra Pradesh for use as nutritional supplements: Two wild edible mushrooms, *Podaxis pistillaris* (L. ex Pers) Fr. and *Termitomyces heimii* Natrajan were studied for their nutritional properties, mineral element analysis and antioxidant properties. The results revealed that these wild edible mushrooms are highly nutritive and are a good source of macro (Mg, P, K, and Ca) and micro nutrient elements (Fe, Cu, Zn, Mo, Se, B and Mn). Multiple assays approach was used for evaluating the antioxidant potential. *Podaxis pistillaris* showed significant antioxidant property in terms of ferric reducing power, scavenging of radicals and chelating of ferrous-ions. These results thereof suggest that these mushrooms are good sources of naturally occurring antioxidants and have the potential to be used as dietary supplements, functional foods, and even as nutraceuticals.

Evaluating therapeutic potential of two medicinally imp. plants:

Adathoda vasica Nees: Traditional medicine is a treasure trove of pharmaceutically active molecules. The mechanism of their action and the targets they affect are not elucidated. This lack of understanding is the main reason cited by modern medicine in ignoring the traditional medicinal practices. A strategy to combine computational chemistry with biochemistry and molecular biology helps bridge this gap. In short, molecular modelling, molecular docking and molecular dynamics are employed to ascertain the nature of the active molecules of plant origin. Attempts are made to understand the nature of their interaction with the enzymes of interest. Based on the screening in silico, in vitro enzyme inhibitory studies are carried out to validate the results obtained. Using this strategy an attempt was made to understand the influence of alkaloids of *Adhatoda vasica* Nees on key enzymes of the inflammatory pathway. The results indicated that the alkaloids actively interact and inhibit the enzymes of interest. Allowing us to understand the mechanism of their action and helping us preposition these molecules as leads for future drugs.

Tecomastans (L.) Juss. ex Kunth: Medicinal plants have been extensively utilized in ethnomedicine worldwide. In recent years, there has been growing interest in alternative therapies and natural products derived from plants that possess therapeutic properties since they are safer and more effective over synthetic drugs. *Tecomastans* (L.) Juss. ex Kunth is indigenously used to treat several health ailments. However, the plant has remained unmapped for its chemical profiling and therapeutic benefits. Nutritional profiling of the plant parts was studied and found

to be rich in essential amino acids, minerals, fatty acids, and components of volatile oils. Various bioactive components were screened, quantified, and characterized from the plant parts and were assessed for their therapeutic potential using in vitro models. The results obtained showed significant anticancer, antioxidant, and antimicrobial potential. To further augment the bioactivity of the plant extracts, nanoparticle synthesis was undertaken, which exhibited enhanced antioxidant and antimicrobial action of the fractions and isolated compounds.

Bioactive principles and medicinal properties of

Trachyspermum ammi (Ajwain): Extracts of aerial parts of *Trachyspermum ammi* were prepared with solvents of increasing order of polarity. The study revealed that the aerial parts of *T. ammi* contained carbohydrate derivatives, amino acid derivatives, flavonoids, phenols, steroids, triterpenoids and saponins. Amongst all the fractions, ethyl acetate fraction exhibited highest quantities of phenolics, flavonoids and flavanols. This fraction also exhibited significantly high antioxidant and antidiabetic activities in in vitro model systems. Hence, ethyl acetate fraction was subjected to chromatographic techniques, to identify its active compounds. The hexane fraction from the methanolic extract showed maximum anti-carcinogenic activity on osteosarcoma cell lines. This work demonstrates that *T. ammi* is a rich source of medicinally active compounds with potentially several pharmacological benefits.

A Study of Antioxidant, Anti-Inflammatory, Anti-Cancer and Antibacterial Potential of Endophytic Fungi isolated from two Medicinally Important Plants

Bauhinia purpurea: The target of the study is to evaluate the bioactive potential of various molecules produced by the endophytic fungi inhabiting *Bauhinia purpurea*. Sixteen endophytic fungal strains were isolated from the leaves of *Bauhinia purpurea*. Four isolates showed reasonable anti-oxidant activity. They were identified as *Diaporthe phaseolorum*, *Diaporthe foeniculina*, *Alternaria citri* and *Fusarium graminearum*, based on 18S rDNA sequencing.

Crude extracts of these four endophytic fungi were evaluated for their antibacterial and synergistic activities using resistant strains of *Escherichia coli* and *Pseudomonas aeruginosa*. The *Diaporthe* sp. extracts when used in conjunction with tetracycline showed promising synergistic activity. 45 selected metabolites of *Diaporthe* species are being evaluated for their potential use as RND efflux pump inhibitors employing Molecular docking studies.

Anti-cancer activity of crude extracts of six endophytic fungi was tested on glioblastoma cell lines using MTT assay. While extracts of *Fusarium* sp. showed significant potential in inhibiting glioblastoma cell lines, those from *Diaporthe* sp. and *Alternaria* sp. extracts showed moderate inhibitory activity.

Sweitenia mahagony: Eight endophytic fungi were isolated from the leaves of *Sweitenia mahagony*. Crude extracts of these fungi were prepared using different organic solvents to screen for their potential bioactivities. Currently, antibacterial and anti-cancer activities are being evaluated.

Exploring the Potential of Fungi from the Environs of Puttaparthi as Sources of Medicinally Active Natural Products

Fungi were isolated from known medicinal plants (*Ficus religiosa* & *Emblica officinalis*), soil and waste water. They were identified, pure cultures prepared, maintained and their extracts obtained. The extracts were tested for various biological activities: anti-oxidant, anti-diabetic, anti-inflammatory, anti-bacterial, anti-candidial and larvicidal at varied concentrations. The activity of the extracts was compared against that of standard drugs/known compounds. Several extracts showed considerable activity when compared with that of the standards. The compounds from extracts showing promising activity were analyzed for their chemical structures by employing spectrometric techniques such as UV, FTIR and Mass spectrometry.

Fungal compounds were evaluated for their suitability as agents of decolourisation and detoxification of dyes such as Congo red and reactive black-5. Optimisation of various parameters such as temperature, concentration, Biomass dosage for decolourisation of the dyes was completed using *Aspergillus arcuoverdensis*. Regenerative ability assay was carried out to understand the toxicity of the dyes on the live fungal isolates. Effects of live and dead biomass on the decolourisation of the dyes simulated in artificial waste water were studied. The fungal compounds from these extracts produced significant decolourisation of waste water.

Gluten Free Multigrain Nutria-Dense Bars

The nutri bars are one of the popular convenient snack foods, nutritionally balanced, and versatile products made up of whole cereals, millets, fruits, nuts, and sweeteners and used as ideal meal replacers to prevent nutrition related disorders. Nutritionally balanced bars using locally available ingredients were developed and evaluated for their nutritional quality and shelf stability. The developed bars were found to be rich in energy, carbohydrates, protein, fat, minerals, polyphenols, and flavonoids. Sorghum, millet-nut bars were found more acceptable and nutritionally dense compared to multigrain-nut bars. The developed products were found acceptable and shelf stable for four months.

Plant-based Substitutes and Protein Isolates as Dairy Alternatives

The FMCG industry has come up with several milk alternatives due to the rapid interest of health-centric consumers towards plant-based substitutes. As a result of these trends, plant-based substitutes were used to formulate ice cream along with herbal extracts to enhance the flavour of the product. The developed product was supported with an analysis of quality characteristics and shelf life studies and got a beneficial outcome in terms of all attributes.

With the increasing popularity of vegan diets, plant-based protein isolates have been good alternatives over dairy protein isolates due to their comparable amino acid composition, high digestibility factor, and biological value. Considering the raised ergogenic and nutrient requirements of young women athletes, convenient and instant products were formulated utilizing plant-based protein isolates. Nutritional profiling of the developed products was carried out and were found rich in energy, protein, BCAAs,

carbohydrates, calcium, and polyphenols when compared to the commercial products. An attempt was made to enhance the products by the addition of specific immune enhancing and healing herbs and flowers. Both products exhibited significant anti-inflammatory properties using in vitro methods.

Food Processing Waste Utilization for Value Addition

Wastes from the fruit and vegetable processing market contain potential byproducts and bioactive components that can be utilized and converted into value added products. An attempt was made to utilize vegetable waste from potato peel, carrot peel, and carrot leaves. Dietary fiber and antioxidants were characterized from the waste and studied for their chemical composition and in vitro biological activities. Crackers and soup mixes were developed utilizing extracted fiber from the vegetable peel and leaf, which were found acceptable and shelf stable for four months.

Potential Role of Macular Carotenoids in Promoting Eye Health

Age Related Macular Degeneration (AMD) is the foremost reason for impaired vision in the people aged above 60 years, resulting in the decrement of life quality. Oxidants, including free radicals, are partly responsible for the aging process. Adherence to a diet rich in antioxidants like vitamins A, C, E, and macular carotenoids such as lutein and zeaxanthin decrease the risk of AMD progression. The present study witnessed the formulation and evaluation of foods, incorporating pocket friendly locally available green leafy vegetables rich in lutein and zeaxanthin. Collaboration was done with the Dept. of Ophthalmology at Sri Sathya Sai Institute of Higher Medical Sciences (SSSIHMS), Prasanthigram, to identify subjects and impart awareness regarding AMD and the role of xanthophyll rich foods in its management.

Nutritional Biology and Metabolomics Studies for Mitigating Life-Style Disorders

As part of the ongoing doctoral research programme, nutritional biology and metabolomic studies are being carried out on indigenous pigmented rice varieties related to diabetes. Several rice varieties were found to exhibit good inhibitory activity against carbohydrate digesting enzymes, and incretin hormone degrading enzymes, implicated in diabetes. They also inhibited formation of advanced glycated end products, implicated in the aetiology of diabetes. In vivo glycaemic response studies in human volunteers revealed Kattuyanam and Karunkuruvai, two Indian red rice varieties, to exhibit low glycaemic index (GI) compared to the high GI white rice. An untargeted Q-TOF LC-MS analysis identified over hundred phenolic metabolites across ten pigmented rice varieties. Confirmation of antidiabetic activity of the abundant phenolics is being investigated using in silico techniques.

Development of Microgreens-based Health-Functional Culinary Formulations

As part of another ongoing doctoral research programme, metabolomic analysis of a genre of novel food crop, microgreens, revealed a unique phenolic metabolite fingerprint for each of the microgreens with the flavonol class being the most abundant compound. Novel shelf-stable functional culinary products

were formulated using these phytochemical rich microgreens. The developed products exhibited good functional and sensory quality with a high score for marketability and good shelf life. This study thus, contributed to expanding the utilization of these tiny short-lived microgreens from the conventional usage as salad greens and garnishes, to their application as interesting culinary ingredients.

Social Sciences

Empirical Study on Organisational Learning and Green Supply Chain Practices

In organisations, effective functioning of green supply chain practices is a challenging form of cooperation between different knowledge producers and ubiquitous types of experts. Organisational learning to support green supply chain management practices is a continuous learning process that is expected to develop an informed and involved organisational citizenry with creative problem-solving skills, scientific and social literacy, and commitment to engage in responsible individual and co-operative actions. The aim of the study is to understand how organisational learning impact and enhance green supply chain practices in the organisations. The study is primarily descriptive and exploratory in nature. For the study, twelve select companies from the manufacturing industry were identified using purposive sampling, based on the Pollution Index Score. Mixed method approach is used to confirm, cross-validate and corroborate findings. The results of the study draws a contextual relationship between organisational learning and green supply chain practices, and this relationship ascertains that in organisations, if green practices are accentuated through learning, any business can simplify, synergise, strategize and scale up the green supply chain practices for the benefit of both the organisation and the environment.

Environment responsibility as part of CSR: Development of Fuzzy Based Model to Assess Sustainability

Climate change and global warming have hit the boardrooms of corporations more than ever before. Sustainability indices have become important criteria in today's parlance to assess the risk of investing or collaborating with any company as part of their supply chain strategy. Many international firms provide these indices used by corporations to assess sustainability and collaborate. In a competing scenario, there is a need for companies in developing economies like India to be on par with their counterparts across the world by obtaining good sustainability scores.

Towards this end, one of the measures the Government of India has taken is mandating transparency in Corporate Social Responsibility (CSR) reporting through The Companies Act 2013. Since then, large amounts of money that have been spent in specific areas have been reported towards achieving societal needs, and part of it towards greening the supply chain. Using data obtained from the annual reports of NIFTY indexed companies, a published research paper developed a fuzzy-logic-based model to obtain a sustainability score for companies. The inputs used in

the model deal with the triple bottom line criteria—Profit, People and Planet (PPP). Using fuzzy logic, rules that define sustainability have been created. The work discusses the patterns in the sustainability scores obtained with respect to the NIFTY indexed companies.

Credit Risk Management of Microfinance Institutions in India

With the rise in per capita incomes, 'high consumption' lifestyles are posing a threat to the sustenance of the planet. This over-consumption of resources needs an urgent check in order to lower the environmental impact of these unsustainable lifestyles. Hence, it is important to bring about a shift in the consumption practices to a new paradigm. This research is an attempt to understand the pro-environmental behaviours and its drivers, in an Indian context, given the relevance of sustainability to businesses, governments and society at large.

Sustainable Consumption Patterns of Indians

A scoping review of the field of behavioural economics that focused on health insurance was carried out using the five-stage framework provided by Arksey and O'Malley. A total of 120 studies were identified that met the eligibility criteria. From these studies, information pertaining to consumer behaviour in the health insurance market and means to channel consumer behaviour were extracted.

The state of research of the field found that 93% of the studies are based on samples drawn from western countries, 5% of the studies have used field experiments, 97% of the studies have used a positivist research paradigm, and more than half the studies have focused on just five behavioural factors. Building on these observations, the study provided directions for future research.

Assessment of Entrepreneurship Development Programmes with Respect to Rural Entrepreneurship

Rural Entrepreneurship is increasingly considered as the solution for several rural development related problems. Central and state governments are investing heavily on Entrepreneurship Development Programmes (EDPs) to aspire youth to take up the entrepreneurial journey. Many of these EDPs function with a motive to promote rural entrepreneurship, with an underlying assumption that these local ventures will create alternative employment in the rural areas and take off the burden from agriculture. The performance measurement of these interventions in the rural regions can pave way for more effectiveness and thereby increase the potential of rural entrepreneurship. This work studies how the objectives of these EDPs' get translated into actionable items and what kind of Socio-economic impact is created as an output of this training. The study is expected to suggest a model EDP suitable for rural entrepreneurship considering the performance and impact generated by legacy programmes.

A Study to Assess Social Impact of Social Enterprises that Address Disability Issues

Among the Sustainable Development Goals (SDG), SDG 10.2. (2015) aims to 'empower and promote the social, economic, and

political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status'. For most of the groups marginalised in the categories mentioned in this SDG, the barrier is mostly attitudinal. But the disabled demography also faces physical barriers along with the attitudinal ones. They have barriers in areas ranging from mobility and accessibility to performing basic everyday tasks like using a restroom; engaging in sports; or even eating food. Certain products and services can help them cross these barriers. But it may be unreal to expect the Government and NGOs to provide these products and services in a sustainable manner.

Social enterprises play a significant role in filling this gap. Social enterprises are considered to be enterprises that are 'social mission driven' and are also 'for profit' (at least for the purpose of this study). This duality in social enterprises leads to a kind of trade-off between purpose and profit orientations in terms of priority. If the social entrepreneurs are able to tangibly evidence the social impact they are making towards their purpose, it could be a motivation to give a tad more emphasis to their social mission. This study is meant to be an intervention in this regard. It aims to measure the social impact of social enterprises serving persons with disabilities.

The objective is to measure the social impact of selected social enterprises using the Social Return on Investment (SROI) tool and to conduct a secondary, qualitative evaluation of the same set of social enterprises and then compare the results arrived at by using the SROI model with that of the qualitative study.

Assessing the Impact of Financial Inclusion on Agrarian Incomes and Well-being

Agrarian Incomes are dependent on several variables like monsoons, irrigation facilities, government support, support from financial institutions, etc. The agrarian household is the most vulnerable in case of negative fluctuations in these variables. This research seeks to understand the concept of 'Financial well-being' of agrarian households, through the lens of Financial Inclusion. Agricultural activities extend to different dimensions and are impacted diversely. Can access to formal financial services strengthen the abilities of agriculturists in terms of income generation, and can it augment their efforts towards stable and sustainable incomes?

Relationship between Financial Development and Economic Growth: An Empirical Evidence from BRICS Economies

This study explores the causal relationship between financial development and economic growth of BRICS economies by taking the annual data from 1996 to 2016. Many of the existing studies considered only the depth factor for measuring financial development. In addition to depth this study considers efficiency and stability factors for measuring financial development. Also, most of the studies used either financial institution or financial market as a proxy for financial development which may not fully reflect the financial development. Hence, to measure the financial system development, the study constructs three broad-based indices—the financial institution development index, financial market development index, and financial system development

index (which combines intuitions and markets) by using the principal component analysis (PCA). It starts with empirical testing of the stylized features such as efficiency, volatility, mean reversion and Value at Risk of these five stock markets. We have taken daily data from 27 September 1997 to 31 March 2018.

Pedagogical Approaches to Peace Education

Students absorb the spirit of violence from their atmosphere and become the next generation of perpetrators of violence. Therefore, the need to nurture peace in the hearts of children has arisen as an urgent issue to be addressed by all educational institutions, especially the schools. Peace Education is the process of acquiring the values, knowledge and developing positive attitudes, skills, and behaviours to live in harmony with oneself, with others, and with the natural environment. The basic concept of Peace Education is to provide measures to protect the children from falling into the ways of violent society. It attempts to consciously integrate values in all the subjects taught and the entire curriculum through different pedagogical approaches (such as dialogue, silent-sitting/meditation, artistic and literary endeavours, and co-curricular activities) necessary for peaceful living and peace-building from which the whole of humanity will benefit.

The present exploratory multiple case study was done on students of class IX and X, teachers, parents and alumni from the schools of four philanthropic organisations in South India. A mixed approach adopting both qualitative and quantitative methods involving observation, focussed group discussions, questionnaires, documentary analysis, etc. is used in the study.

The main objective is to find the different peace components in the curriculum and the methodology by which it is inculcated in the students. Students' attitude towards peace and the perception of stakeholders on the various methods used to teach peace is also assessed with the help of three questionnaires standardised by the researcher. The data collected is being analysed both qualitatively and quantitatively.

Humanities

Colonial Studies

Research in colonial studies has traditionally revolved around the historical, political and economic aspects of the colonial regime. By 'Orientalising the Orient', the coloniser ensured that his subjects would aspire to grow to become like him. The British Empire was, however, built less by military force and more through cultural reinforcement. To this end, the British engaged many tools: religion, language and sport.

Sport is a universal element in all cultures, which has immense ramifications in a civil society. In fact, with the coming of age of Popular Culture studies by academia, sport is being studied exclusively from historical, political and economic perspectives.

The study made the case for an unremitting academic focus on sport, from a colonial and post-colonial perspective. The uniqueness and the interdisciplinary nature of this study was in its

bringing together popular culture and literary theories to establish its hypothesis. The study traced the colonial path to the growth of the game in the colony through the colonial postulates of Edward Said and Homi K Bhabha.

It discussed the move from the 'exclusivity' of the English to the 'mimicry' of the natives as a part of the informal modes of rule employed in a colonial framework. Once formal modes of rule were employed in the Empire, phases of 'cultural reinforcement' by the colonists followed by 'patronage' by the natives were delineated. At every phase, the research is systematically classified and evidenced with examples from seminal historical narratives in the sport.

The second part of this study expounded how the very same tool that was used to establish the native's 'effeminacy' was used to invert the hegemony. The study argued how decolonisation in this case did not occur through 'rejection' of the colonial culture, but paradoxically, through 'adaptation' and 'assimilation' in clear colonial terms.

The concluding section of the study ensured recency and relevance by discussing the extension of the decolonising moves in recent times, in the game of cricket, to 'subvert authority'. A parallel was drawn of this stage with the carnival of the medieval times, studied through the framework of Mikhail Bakhtin's theory of carnival.

The Quest for One's Self in the Perilous Realm: A Study of Select Fantasy Texts of J R R Tolkien and J K Rowling

Fantasy is as old as storytelling and therefore acquires an air of mystery and intrigue. Fantasy literature, in its varied forms, can be studied as Children's Literature, Gothic Literature, Popular Culture/Literature or Crossover Fiction. Many popular works of fantasy are adapted into film, TV series, dramas, video games, etc. Though Fantasy is not a new addition to the literary scene in England, it achieved immense validity and support after Tolkien established its status with his oeuvre and critical commentary. Rowling, following his footsteps, awakens a love for reading in an entire generation through her artful rendition of Fantasy.

The study focuses on specific Fantasy texts by J R R Tolkien and J K Rowling, and endeavours to map out 'Individuation' - Integrating the parts of the self into one - by looking at man's journey within. The study utilises the Archetypal criticism of Carl Gustav Jung along with Joseph Campbell's Monomyth or the Hero's Journey to study individuation in the protagonists. This particular work premises that Fantasy literature is a reflection of and commentary on life (popular fiction mirroring reality). The study aims to track internal transformation: inner conflicts are represented using symbols in Fantasy - for instance, a dragon embodies avarice within the fantastic portal or universe.

This work highlights the workings of heroes and their evolution from inaction to maturity and sacrifice - showcasing the nobility they attain on their journey toward selfhood. The Wise guide, Shadow and Trickster figures are given special emphasis as they facilitate or impede the heroes' progress; but are essential

for the quest. Descriptions, exchanges or excerpts from the texts are quoted and analysed to authenticate the researcher's interpretations. The philosophical questions about life, death, immortality, joy, grief and other binaries are grappled with. The insistence on empathy, love, sacrifice, and collective effort (by the protagonists) in the books is premeditated to arrive at the balanced truth of life and reach synchrony in the self and thereby, the society. In short, the study evaluates life in the (Fantastic) Secondary world to understand real life in the actual world.

Text and Subtext: A Study of Select Plays of Ivan Turgenev and Anton Chekhov

From times immemorial, much has been said and written on all that was written by the writers of many great works of art. Perhaps, this process (writing on what was written) could be one of the reasons why writers and their works of art stand immortalised even today. Apart from such writers, there are also a few writers in the field of English literature, especially within the domain of European Drama, who are famous for all that they have not written. These dramatists brilliantly portrayed the inexpressible in their works through their efficient usage of the technique called subtext. The plays of Ivan Turgenev and Anton Chekhov stand as testimony to this extraordinary talent.

The study intends to give a comprehensive view of subtext latent in the plays of the two playwrights, Ivan Turgenev and Anton Chekhov, a pioneer and a master of subtext respectively. Subtext is used as a magnifying lens which broadens and gives a wholeness to the reader's perspective, as it throws light on the layered texture and the deep-rooted structure of their plays. Much thought needs to be given to understand the abstract ideas or concepts latent in great works of literature, besides the easily comprehensible concrete concepts in them.

One has to remember that the former plays no less a role than the latter, in attributing greatness to a literary work. Writers like Ivan Turgenev and Anton Chekhov achieved a fine balance between the text and subtext in their plays, by juxtaposing the said with the unsaid; action with inaction; the physical with the mental realm; emotions with their expressions; the inanimate with the animate; the reflection of the inner world with the outer world, etc. In order to achieve a comprehensive outlook of a great work of art, or life in general, it is essential to understand and appreciate both the implicit and explicit aspects.

Subsequently, the study also reveals the areas where Turgenev and Chekhov balance, differ, and supersede each other, in their use of subtext in the plays. Since subtext arises when there exists a strong disparity among one's thoughts, words, and deeds, usage of this technique helps a person to sift the pretentious self from the real self, the unsaid from the said, and the implicit feelings from explicit gestures. In the process, subtext also provides an insight into the real inner selves of fellow human beings and, in the process, throws light on many new insights about one's own self.

Funded Research Projects

SSSIHL continues to pursue needs-based research that will help alleviate problems affecting the poorer sections of society.

During the academic year 2019/20, the total value of ongoing projects at the University was ₹11.1 Crores.

Mathematics and Computer Science

Big Data Analytics and High Performance Computing

Maestro Technology, USA

₹90 Lakhs

AI in Sports

Grey Scientific Lab

₹5 Lakhs

Whole Slide Imaging (WHI)

Grey Scientific Lab

₹5 Lakhs

Physics

Fabrication of glass- ceramics comprising of semi conducting metal oxide crystallites at different length scales and study their gas sensing characteristics

UGC-BSR Startup

₹10 Lakhs

Gamma-Ray and Ion Beam Irradiation Studies on Lead-Free Piezoelectric Ceramics and their Polymer Composites

UGC-DAE-CSR Kolkata

₹45,000

Design and Development of nanomaterial based dip sticks and tea bags for instant removal of fluoride from water

Kurita Water and Environment Foundation (KWEF), Japan

₹2.8 Lakhs

Experimental Investigations on the level structures of doubly odd Ta isotopes

UGC-DAE CSR Kolkata

₹6.8 Lakhs

Design and Development of Gamma-Florescence Dual Imaging Sentinel Lymph Node Navigation Surgery Intraoperative Probe

DAE-BRNS

₹94 Lakhs

Femtosecond laser Enabled Micro-fabrication of Micro-Total-analysis Optofluidic Systems (FEMTOS)

DST

₹24 Lakhs

FLAP-MED: Femtosecond laser Assisted Prototyping Micro Electro-Optofluidic Devices

DST

₹48 Lakhs

Design and development of Glass based optofluidic platform by Femtosecond Laser Micromachining

DST

₹46 Lakhs

Chemistry

REsCUE Device: Rapid Estimation of COVID-19 based on Ultrasensitive Emission Detection

SSSIHL-CSR

₹120 Lakhs

Synthesis Water Treatment of Identified Physico-chemical parameters in the three mandals of Ananthpur district of Andhra Pradesh

4S Foundation

₹5.03 Lakhs

Synthesis of Novel Andrographolide derivatives as potential anticancer and antibacterial agents

CSIR

₹24 Lakhs

Surface Plasmon-Coupled Emission based Benchtop Device for Cardiac Troponin T Quantification

DST - Instrumentation Development Programme (IDP)

Technology Development Programmes (TDP)

₹45.68 Lakhs

ANIRVID: A Cellphone based Point-of-Care Diagnostic Device to Evaluate the Effect of Alternative Therapeutic Interventions on Depression and Heart Ailments

Tata Education and Development Trust

₹97 Lakhs

Hand-held mobile for non-invasive monitoring of Bilirubin in neonates

Indian Council of Medical Research (ICMR)

₹64.45 Lakhs

Mobile Dengue Diagnostic Technology (m-DDT): A Smartphone-based Point-of-care Diagnostic Device

Defense Research and Development Organisation (DRDO)

₹40.67 Lakhs

SONEERA: Surface-water quality observation 'N' elimination of effluents using radio-frequency transmitter technology

Prasanthi Trust, USA

₹31.34 Lakhs

Biosciences

Grant for Infrastructural Support to the Department of Biosciences

UGC SAP DRS III

₹111 Lakhs

Augmenting Postgraduate Teaching & Research Facilities in Dept. of Biosciences

DST FIST

₹88 Lakhs

Perturbation in Metabolic pathways might drive Avascular Necrosis of Femoral Head by modulating bone biology: Mechanisms, Potential biomarkers and therapeutic targets

DST

₹60.8 Lakhs

Mechanism of resistance involved in the emergence of nitrofurantoin resistance among uropathogenic enterobacteriaceae

Indian Council of Medical Research (ICMR)

₹60 Lakhs

Food & Nutritional Sciences

Antidiabetic evaluation of Indian pigmented rice varieties: A mechanistic metabolomic based approach

Indian Council of Medical Research (ICMR)

₹24 Lakhs

XRF based profiling of essential minerals in native and bio-processed pigmented rice varieties

UGC-DAE-Consortium

₹45,000

Economics

A Structural Model of the Current Account of India's Balance of Payment Under the New Economic Policy Regime

Indian Council of Social Science Research (ICSSR)

₹3 Lakhs



Research Publications

Mathematics & Computer Science

Publications in Peer Reviewed Journals

Rohan Yashraj Gupta, Satya Sai Mudigonda, Phani Krishna Kandala, Dr. Pallav Kumar Baruah, A Framework for Comprehensive Fraud Management Using Actuarial Techniques, *International Journal of Scientific & Engineering Research*, 10(3), 780-791 (2019).

Rohan Yashraj Gupta, Satya Sai Mudigonda, A Proposed Model for Measuring Protection of Policyholders' Interest at Industry Level, *Journal of Insurance Regulatory and Development Authority of India (IRDAI)*, 17(1), 59-65, (2019).

D K K Vamsi, Deva Siva Sai Murari Kanumoori, Bishal Chhetri, Additional Food Supplements as a Tool for Biological Conservation of Biosystems in the Presence of Inhibitory Effect of the Prey, *Acta Biotheoretica*, 1-35, (2019).

Lalith Srikanth Chintalapati, Raghunatha Sarma Rachakonda, Enhanced Affinity for Spectral Clustering using Topological Node Features (TNFS), *International Journal of Engineering and Advanced Technology (IJEAT)*, 9(1), 2249-8958, (2019).

Lalith Srikanth Chintalapati, Raghunatha Sarma Rachakonda, Enhanced Similarity for Spectral Clustering using Local Steering Features, *International Journal of Innovative Technology and Exploring Engineering (IJITEE)*, 8(12), 2278-3075, (2019).

P Sunil Kumar, Raghunatha Sarma, Satya Sai Mudigonda, An Analytical Model for Evaluating Social Security Schemes-A Focus on "Ayushman Bharat" Universal Health Scheme in India, *International Journal of Recent Technology and Engineering (IJRTE)*, 8(3), 8929-8936 (2019).

S R Pranav Sai, Ajay Singh Pawar, Satya Sai Mudigonda, Pallav Kumar Baruah, Application of High-Performance Computing for Calculating Reserves Using the Cape Cod Method, *International Journal of Engineering and Advanced Technology*, 9(1), 54-57, (2019).

Ankit Kumar, Ramesh K Vats, Avadhesh Kumar, Approximate Controllability of Second-order Non-autonomous System with Finite Delay, *Journal of Dynamical and Control Systems*, (2020).

S R Pranav Sai, Phani Krishna Kandala, Satya Sai Mudigonda, Pallav Kumar Baruah, Assessing Sustainability of General Insurance Business through Real Time KPI using GPUs and Neural Networks, *International Journal of Recent Technology and Engineering (IJRTE)*, 8(42), 620-628, (2019).

K S P Sowndarya, Y Lakshmi Naidu, Dominator and Total Dominator Coloring on Square Chessboard, *Global Journal of Pure and Applied Mathematics*, 15(4), 499-504, (2019).

Conference Presentations / Proceedings

Ananth V S, D K K Vamsi, Achieving Minimum Time Pest Eradication by Providing the Optimal Quality of Additional food to the Predator in a Predator-Prey system involving Type III Functional Response, *Mathematical Models in Ecology and Evolution* (16-19 Jul 2019) University of Lyon, France.

Kesavan M, Sandeep Sahu, Ajith Padyana, Prediction of Cascading Popularity: A Feature Based Approach, *26th IEEE International Conference on High Performance Computing, Data and Analytics (HiPC-2019)* (17-20 Dec 2019) Hyderabad, India.

G Sai Akhilesh, D Gautham Sreeram, B Sateesh, R Raghunatha Sarma, Chandra Sekhar Malladi and Pallav Kumar Baruah, A Novel Real-time Scalable Recommender System using Collaborative Filtering and NLP Techniques, *26th IEEE International Conference on High Performance Computing, Data and Analytics (HiPC-2019)* (17-20 Dec 2019) Hyderabad, India.

S R Pranav Sai, Ajay Singh Pawar, Satya Sai Mudigonda, Pallav Kumar Baruah, Application of High-Performance Computing for Calculating Reserves using the Cape Cod Method, *26th IEEE International Conference on High Performance Computing, Data and Analytics (HiPC-2019)* (17-20 Dec 2019) Hyderabad, India.

Goli Uma Sankar, Pallav Kumar Baruah, Sathya Sai Mudigonda, Fraud Detection on Automobile Insurance Industry using SPARK, *26th IEEE International Conference on High Performance Computing, Data and Analytics (HiPC-2019)* (17-20 Dec 2019) Hyderabad, India.

S R Pranav Sai, Phani Krishna Kandala, Satya Sai Mudigonda, Pallav Kumar Baruah, Assessing Sustainability of General Insurance Business through Real Time KPI using GPUs and Neural Networks, *Kalasalingam Global Conference (KGC-2019)* (18-20 Dec 2019) Krishnankoil, Tamil Nadu.

Rohan Yashraj Gupta, Satya Sai Mudigonda, Phani Krishna Kandala, Pallav Kumar Baruah, Implementation of a predictive model for fraud detection in motor insurance using gradient boosting method and validation with actuarial models, *Kalasalingam Global Conference (KGC-2019)* (18-20 Dec 2019) Krishnankoil, Tamil Nadu.

Akhilesh Pandey, S Balasubramanian and Darshan Gera, Emphasizing Similar Feature Representations to Defend against Adversarial Attacks, *National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG 2019)* (22-24 Dec 2020) KLE Technological University, Hubli, Karnataka.

Abhinav B, Basanta Sharma, S Balasubramanian, Darshan Gera, Srikanth Khanna, CaReNet: CapsNet based Regression Network, *National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG 2019)* (22-24 Dec 2020) KLE Technological University, Hubli, Karnataka.

2019) (22-24 Dec 2020) KLE Technological University, Hubli, Karnataka.

Kelam Goutam, S Balasubramanian, iSalGAN - An Improved Saliency GAN, **National Conference on Computer Vision, Pattern Recognition, Image Processing and Graphics (NCVPRIPG 2019)** (22-24 Dec 2020) KLE Technological University, Hubli, Karnataka.

Sai Raam Venkataraman, S Balasubramanian, R Raghunatha Sarma, Building Deep Equivariant Capsule Networks, **International Conference on Learning Representations (ICLR)** (26 Apr - 1 May 2020) Virtual Conference.

Physics

Publications in Peer Reviewed Journals

Abishek H, Chelli Sai Manohar, V Sai Muthukumar, B Siva Kumar, Maurizio Ferrari, K N Naresh, Krishna Chaitanya V, Paper-microfluidics based SERS substrate for PPB level detection of Catechol, **Optical Materials**, 94, 305-310, (2019).

Aditya Dileep Kurdekar, Chelli Sai Manohar, L A Avinash Chunduri, Mohan Kumar Haleygurisetty, Indira K Hewlett, Venkataramaniah Kamiseti, Computational design and clinical demonstration of a copper nanocluster based universal immunosensor for sensitive diagnostics, **Nanoscale Advances**, 2, 304-314, (2020).

S Tukaram, R Bhimireddi, K B R Varma, $\text{Sr}_{(1-x)}(\text{Na}_{0.5}\text{Bi}_{0.5})_{0.3}\text{Bi}_4\text{Ti}_5\text{O}_{18}$ ceramics in the system $\text{Sr}_{(2-x)}(\text{Na}_{0.5}\text{Bi}_{0.5})_{0.3}\text{Bi}_4\text{Ti}_5\text{O}_{18}$ (where $0 \leq x \leq 0.5$), **J American Ceramic Society**, 102(7), 4082, (2019).

R Bhimireddi, S Tukaram, K B R Varma, Polymer composite of poly (vinylidene fluoride)– 2-methyl- 4-nitroaniline via hot-pressing technique; structural, optical and electrical properties, **Materials Research Express**, 6(7), 076303, (2019).

Nandakumar H, Srivastava S, ABC-OCT - A Cross-Platform Implementation of Real-Time Fourier-Domain Optical Coherence Tomography, **Journal of Open Research Software**, 8(1), 7, (2020).

Sumukh Nandan R, R Gowrishankar, Shailesh Srivastava, Active loss compensation in the resonant optical gyroscope with a "reflector": towards a cost-effective alternative for the navigational grade, **Applied Optics**, 58(31), 8589-8597, (2019).

Murali Ravi, Angu Sewa, Shashidhar T G, Siva Sankara Sai Sanagapati, FPGA as a Hardware Accelerator for Computation Intensive Maximum Likelihood Expectation Maximization Medical Image Reconstruction Algorithm, **IEEE Access**, 7, 111727-111735, (2019).

Ranjan Rai, Muralikrishna Molli, Magnetic, optical and photocatalytic properties of yttrium doped KBiFe_2O_5 , **Applied Physics A**, 125, 878, (2019).

Sumukh Nandan R, Shailesh Srivastava, R Gowrishankar, Non-reciprocal biasing for performance enhancement of the resonant fiber gyroscope with 'Reflector' using In-line Faraday rotators: Design, analysis and characterization, **Optical Fiber Technology**, 53, 102038, (2019).

Jayachandra Prasad T, Neelima G, Ravi N, Kiran N, Nanda Kumar Reddy Nallabala, Venkata Krishnaiah Kummara, Suresh K, Paramesh Gadige, Optical and spectroscopic properties of Ho^{3+} -doped fluorophosphate glasses for visible lighting applications, **Materials Research Bulletin**, 124, 110753, (2020).

Hari Nandakumar, Satya Prasanna Mallick, Shailesh Srivastava, Sensing high frequency sub-nanometer vibrations using optical coherence tomography with real-time profilometry of multiple inner layers, **Optics and Lasers in Engineering**, 127, 105992, (2020).

Lavanya Rathi P, Deepa S, Structural, magnetic, thermal and optical properties of Sn^{2+} cation doped magnetite nanoparticles, **Ceramics International**, 46(3), 2969-2978, (2019).

P S J Bharadwaj, Swarup Kundu, Vijay Sai Kollipara, Kalidindi B R Varma, Structural, optical and magnetic properties of Sm^{3+} doped yttrium orthoferrite (YFeO_3) obtained by sol-gel synthesis route, **Journal of Physics: Condensed Matter**, 32(3), 035810, (2019).

P S J Bharadwaj, Swarup Kundu, Vijay Sai Kollipara, Kalidindi B R Varma, Synergistic effect of trivalent (Gd^{3+} , Sm^{3+}) and high-valent (Ti^{4+}) co-doping on antiferromagnetic YFeO_3 , **RSC Advances**, 10(37), 22183-22195, (2020).

Conference Presentations / Proceedings

Hema Chander Ch, Paramesh Gadige, Study of coffee-ring patterns from drying drops of clay particle suspensions and effect of electric field, **CompFlu 2019** (5 Dec 2019) Indian Institute of Science Education and Research Bhopal (IISERB), Bhopal, Madhya Pradesh.

Padala Sairam Reddy, Sai Kiran Posam, Siva Sankara Sai S, Sai Kishore Bhyri, Novel RWSA algorithm for Flex-Grid Optical networks giving best Optical performance, Spectrally efficient and Cost optimized network design, **IEEE International Conference on Advanced Networks and Telecommunications Systems (IEEE-ANTS 2019)** (16-19 Dec 2019) Goa, India.

Pranav Godway, Gowrishankar R, Vikram S, V S S Lakshmana Rao B, Sai Krian Kumar Reddy Y, Siva Sankara Sai Sanagapati, B V Avinash, Smart Traffic Management System Based on Software Defined Internet of Things Architecture, **IEEE International Conference on Advanced Networks and Telecommunications Systems (IEEE-ANTS 2019)** (16-19 Dec 2019) Goa, India.

Lavanya Rathi P, Gowrishankar R, Deepa S, Dielectric and

Magnetic properties of Oxides of Tin and Iron and their Composites - A Comparative Study, **64th DAE Solid State Physics Symposium (DAE-SSPS 2019)** (18-22 Dec 2019) Indian Institute of Technology, Jodhpur, Rajasthan.

Anjana Biswas and Prathibha C, Fabrication and Characterization of Low Cost 1-D TiO₂ Nanotubes and their use in Defluoridation of Water, **64th DAE Solid State Physics Symposium (DAE-SSPS 2019)** (18-22 Dec 2019) Indian Institute of Technology, Jodhpur, Rajasthan.

R Sai Santosh, D Sai Shyam, Tomonori Fukuchi, Chary Rangacharyulu, K Venkataramaniah, K Vijay Sai, Design and optimization of a collimator for a New PET system using GATE simulation, **64th DAE-BRNS Symposium on Nuclear Physics** (23-27 Dec 2019) Lucknow University, Uttar Pradesh.

C V Nithishkumar, M Venkatesh Prasad, K Vijay Sai, K Venkataramaniah, Arun K Jain, Non-existence of $^{12}\text{C}_{(\text{g.s.})} + ^{12}\text{C}_{(\text{g.s.})}$ configuration in $^{24}\text{Mg}_{(\text{g.s.})}$ due to mismatch of $^{12}\text{C}_{(\text{g.s.})}$ deformed configurations at the surface, **64th DAE-BRNS Symposium on Nuclear Physics** (23-27 Dec 2019) Lucknow University, Uttar Pradesh.

C Scheidenberger, D S Shreesha Rao, Sagar Venkatesh Prasad, C V Nithishkumar, K Venkataramaniah, K Vijay Sai, B Pfeiffer, A new weighted-slope method for extrapolation of Experimental Masses of Nuclei far from the valley of stability, **64th DAE-BRNS Symposium on Nuclear Physics** (23-27 Dec 2019) Lucknow University, Uttar Pradesh.

B Pfeiffer, D S Shreesha Rao, K Vijay Sai, K Venkataramaniah, C Scheidenberger, Garvey-Kelson relations revisited for Masses of Nuclei far from the valley of stability, **64th DAE-BRNS Symposium on Nuclear Physics** (23-27 Dec 2019) Lucknow University, Uttar Pradesh.

P C Sood, R Gowrishankar, Occurrence of low-lying K=8 2qp structures in actinides and beyond, **64th DAE-BRNS Symposium on Nuclear Physics** (23-27 Dec 2019) Lucknow University, Uttar Pradesh.

R Gowrishankar, Venkatesh Prasad M, Nitishkumar C V, P C Sood, Low-lying structures in neutron rich $^{256}_{99}\text{Es}_{157}$, **64th DAE-BRNS Symposium on Nuclear Physics** (23-27 Dec 2019) Lucknow University, Uttar Pradesh.

D Sai Shyam, Tomonori Fukuchi, R Sai Santosh, K Vijay Sai, Chary Rangacharyulu, Cascade gamma correlations in beta minus decays for a novel modality of medical imaging - simulations, **10th International Conference on Isotopes (10ICI)** (3-7 Feb 2020) Kuala Lumpur, Malaysia.

Ranjan Rai, Muralikrishna Molli, Temperature dependent magnetic properties of KBiFe₂O₅, **International Conference On Advances In Basic Sciences (ICABS19)** (7-9 Feb 2019) Bahal, Haryana.

Chemistry

Publications in Peer Reviewed Journals

Seemesh Bhaskar, Pratyusha Das, Venkatesh Srinivasan, Shivakiran Bhaktha B N, Sai Sathish Ramamurthy, Bloch Surface Waves and Internal Optical Modes-Driven Photonic Crystal-Coupled Emission Platform for Femtomolar Detection of Aluminum Ions, **The Journal of Physical Chemistry C**, 124(13), 7341-7352, (2019).

Bhaskar Seemesh, Sai Sathish Ramamurthy, Mobile Phone-Based Picomolar Detection of Tannic Acid on Nd₂O₃ Nanorod-Metal Thin-Film Interfaces, **ACS Applied Nano Materials**, 2(7), 4613-4625, (2019).

Suvarcha Chauhan, Anand Kumar Manglam, Santosh Kumari, Pooja Kaundal, Chittor N Sundaresan, Effect of Benzheterazoles on the Micellar Behaviour of Sodium Dodecylsulfate in Dimethylsulfoxide: A Conductometric and Spectroscopic Approach, **Journal of Surfactant Detergents**, 23, 195-206, (2020).

Seemesh Bhaskar, N Charan S S Kowshik, S Prathap Chandran, Sai Sathish Ramamurthy, Femtomolar Detection of Spermidine Using Au Decorated SiO₂ Nanohybrid on Plasmon-Coupled Extended Cavity Nanointerface: A Smartphone-Based Fluorescence Dequenching Approach, **ACS Langmuir**, 36(11), 2865-2876, (2020).

Seemesh Bhaskar, Ramay Patra, N Charan, S S Kowshik, K M Ganesh, Venkatesh Srinivasan, Prathap Chandran S, Sai Sathish Ramamurthy, Nanostructure effect on quenching and dequenching of quantum emitters on surface plasmon-coupled interface: A comparative analysis using gold nanospheres and nanostars, **Physica E: Low-dimensional Systems and Nanostructures**, 124, 114276, (2020).

K V S Manichandrika, Sahida Sharma, Promising antifungal agents: a minireview, **Journal of Bioorganic and Medicinal Chemistry**, 28(7), 115398, (2020).

Seemesh Bhaskar, Maku Moronshing, Venkatesh Srinivasan, Pradeep Kumar Badiya, Chandramouli Subramaniam, Sai Sathish Ramamurthy, Silver Soret Nanoparticles for Femtomolar Sensing of Glutathione in a Surface Plasmon-Coupled Emission Platform, **ACS Applied Nano Materials**, 3(5), 4329-4341, (2020).

Kar S, Ramamoorthy G, Mitra K, Shivalingegowda N, Mahesha, Mavileti S K, Krishnappagowda L N, Doble M, Golakoti Nageswara Rao, Synthesis of novel spirobenzopyrans as potent anticancer leads inducing apoptosis in HeLa cells, **Bioorganic & Medicinal Chemistry Letters**, 30(12), 127199-127205, (2020).

Andar A, Hasan M S, Srinivasan V, Al-Adhami M, Gutierrez E, Burgenson D, Ge X, Tolosa L, Kostov Y, Rao G, Wood Microfluidics, **Analytical Chemistry**, 91(17), 11004-11012, (2019).

Krishna Prasad Gannavarapu, V Ganesh, Rajesh Babu Dandamudi, Zirconia nanocomposites with carbon and iron(III) oxide for voltammetric detection of subnanomolar levels of methyl parathion, *Nanoscale Advances*, 1, 4947-4954, (2019).

Conference Presentations / Proceedings

Badiya P K, Beбето R, Ramamurthy S S, Gold nanoparticles from floral extracts of *Tagetes erecta* as novel spacer for enhancements in plasmon-coupled fluorescence emission enhancements, *National Conference on Current Trends and Advances in Chemical Science (CTACS-19)* (19 Sep 2019), Salem, Tamil Nadu.

U Venkata Gopi, Rajesh Babu Dandamudi, S Chandra, Bio diversity of fresh water algae of some ponds of Anantapur District, *International Conference on Environmental, Agricultural, Chemical and Biological Sciences-2020* (24-25 Jan 2020) Puducherry, India.

Biosciences

Publications in Peer Reviewed Journals

Abdulrahman I Almansour, Natarajan Arumugam, Raju Suresh Kumar, D Kotresha, Thota Sai Manohar, S Venketesh, Design, synthesis and cholinesterase inhibitory activity of novel spiropyrrolidine tethered imidazole heterocyclic hybrids, *Bioorganic & Medicinal Chemistry Letters*, 30(2), 126789, (2020).

Natarajan Arumugam, Abdulrahman I Almansour, Raju Suresh Kumar, D Kotresha, R Saiswaroop, S Venketesh, Dispiropyrrolidinyl-piperidone embedded indeno[1,2-b] quinoxaline heterocyclic hybrids: Synthesis, cholinesterase inhibitory activity and their molecular docking simulation, *Bioorganic & Medicinal Chemistry*, 27(12), 2621-2628, (2019).

Kartik S Aiyer, Roshan Rai, B S Vijayakumar, Dye reduction-based electron-transfer activity monitoring assay for assessing microbial electron transfer activity of microbial fuel cell inocula, *Journal of Environmental Sciences*, 96, 171-177, (2020).

Kartik S Aiyer, How does electron transfer occur in microbial fuel cells?, *World Journal of Microbiology and Biotechnology*, 36(2), 1-19, (2020).

Khamari B, Lama M, Pachi Pulusu C, Biswal A P, Lingamallu S M, Mukkirla B S, Sahoo A K, Dash H S N, Sharda R, Kumar P, Bulagonda E P, Molecular analyses of biofilm-producing clinical *Acinetobacter baumannii* isolates from a South Indian tertiary care hospital, *Medical Principles and Practice*, 1011-7571, (2020).

Conference Presentations / Proceedings

Khamari B, Adak S, Mangale V, Moradiya N K, Paci Pulusu C, Lama M, Bulagonda E P, Sequential progressive mutations associated with acquisition of Nitrofurantoin resistance: A study in clinically isolated Gram-negative bacteria, *South Zone Conference on Critical Care (SZCC 2019)* (15-18 Aug 2019) Vishakhapatnam, Andhra Pradesh.

Balaram Khamari, Sudeshna Adak, Vishakha Mangale, Neha Karshan Moradiya, Pachi Pulusu Chanakya, Manmath Lama and Bulagonda Eswarappa Pradeep, Sequential progressive mutations associated with acquisition of Nitrofurantoin resistance: A study in clinically isolated gram-negative bacteria, *South Zone Conference on Critical Care (SZCC 2019)* (15-18 Aug 2019) Vishakhapatnam, Andhra Pradesh.

Sahashransu S Mahapatra, A S Vishwanathan, Characterizing performance of an earthen separator in two-chambered microbial fuel cell, *Advances in Chemical Sciences and Technologies (ACST - 2019)* (23 Sep 2019), National Institute of Technology, Warangal, Telangana.

Mukul Anand, Basavaraju R, Tecoma stans: a novel source of bioactive compounds with potential therapeutic benefits, *National Conference on Functional Foods - Research, Innovations and Challenges (AIMIFOST 2019)* (18 Dec 2019) Amity Institute of Food Technology, Amity University, Noida, Uttar Pradesh.

Prasanth Ghanta, Basavaraju R, Anti-inflammatory potential of Deoxyvasicine - An in-silico approach, *International Conference on Advances in Pharmaceutical and Health Sciences* (20 Feb 2020) NITTE (Deemed to be University), Mangalore, Karnataka.

Balaram Khamari, Pachi Pulusu Chanakya, Manmath Lama and Bulagonda Eswarappa Pradeep, Characterization of clinically isolated carbapenem resistant *Escherichia coli*, *Criticare 2020* (28 Feb - 1 Mar 2020) Hyderabad.

Balaram Khamari, Dash H S N, Bulagonda E P, Characterization of clinically isolated carbapenem-resistant *Escherichia coli*, *Criticare 2020* (28 Feb - 1 Mar 2020) Hyderabad.

Saikrishna Srimadh Bhagavatham, Narsimulu Gumdal, Narasimhan K, Damodaram Potikuri, Rajesh Babu Dandamudi, Sai Mangala Divi, Ashish Pargaonkar, Rahul Ray, Sujith Kumar Pulukool, Vishnu Kannan, Ashwin Ashok Naik, Saibharath Simha Reddy Santha, Prakash Khanchandani, Venketesh Sivaramakrishnan, Adenosine Deaminase (ADA) reprograms metabolism and promotes onset and progression of Rheumatoid Arthritis (RA), *American Society for Mass Spectrometry (ASMS) 2020 Reboot* (1 Jun 2020) Virtual Conference.

Sai Manohar Thota, Sai Sanwid Pradhan, Bhavana N Reddy, Isha Verma, Rajesh Babu D, Vidyasagar K, Pavan Vasoya, Ashish Pargaonkar, Deepak Saligrama, Sunil H V, Krishna

Murty V, Seshagiri Polani, Sanjaya Viswamitra, Dileep Kumar, Joshy E V, Venketesh Sivaramakrishnan, Metabolic rewiring Modulates amyloid-like aggregate formation in Huntington's disease, **American Society for Mass Spectrometry (ASMS) 2020 Reboot** (1 Jun 2020) Virtual Conference.

Food & Nutritional Sciences

Publications in Peer Reviewed Journals

Manjula D Ghoora, Ashrita C Haldipur, N Srividya, Comparative evaluation of phytochemical content, antioxidant capacities and overall antioxidant potential of select culinary microgreens, **Journal of Agriculture and Food Research**, 2, 1-7, 100046, (2020).

Manjula D Ghoora, N Srividya, Effect of Packaging and Coating Technique on Postharvest Quality and Shelf Life of Raphanus sativus L. and Hibiscus sabdariffa L. Microgreens, **Foods**, 9(5), 653, (2020).

Manjula D Ghoora, Dandamudi Rajesh Babu, N Srividya, Nutrient composition, oxalate content and nutritional ranking of ten culinary microgreens, **Journal of Food Composition and Analysis**, 91, 1-10, 103495, (2020).

Conference Presentations / Proceedings

N Saiharini, A Padmaja, Assessment of nutritional and functional properties of passion fruit by-products, **FOODS 2019 - ITAF: International Conference on Innovations and Technological Advances in Food** (5-6 Aug 2019), M O P Vaishnav College for Women Chennai.

Harshini V, Sai Gayathri, A Padmaja, Development of instant soup mix from Muntingia calabura fruit, **FOODS 2019 - ITAF: International Conference on Innovations and Technological Advances in Food** (5-6 Aug 2019), M O P Vaishnav College for Women Chennai.

Sai Dharshini S, Meera M, Healthier ready to eat snack foods: Snack Bars, **International Conference on Whole Grain Technology** (21-22 Aug 2019) Academy of Maritime Education and Training (AMET), Chennai.

K Shraddha Mohan, Sai Dharshini S, Sharanya Menon, Srividya N, Nutritional evaluation and functional properties of multigrain based supplementary protein mix, **International Conference on Whole Grain Technology** (21-22 Aug 2019) Academy of Maritime Education and Training (AMET), Chennai.

Alisha Pradhan, Lakshmi Priya, Meera M, Development, nutrient analysis and shelf-life study of the multigrain composite flour khakhra enriched with papaya flour, **International Conference on Whole Grain Technology** (21-22 Aug 2019) Academy of Maritime Education and Training (AMET), Chennai.

Himaja K, Jyothi N S, Sai Dharshini S, Meera M, Formulation, development and sensory acceptability of snack bars -Oral presentation, **International Conference on Whole Grain Technology** (21-22 Aug 2019) Academy of Maritime Education and Training (AMET), Chennai.

Harshini Sunku, Kondammagari Hemakumari, Sparsh Sumnirom Subba, Tapasya Anand, Role of Plant-Based Proteins In Athletic Performance, **National Conference on Functional Foods - Research, Innovations and Challenges (AIMIFOST 2019)** (18 Dec 2019) Amity Institute of Food Technology, Amity University, Noida, Uttar Pradesh.

B Andallu, Role of phytochemicals in spices in Healthcare, **107th Indian Science Congress** (3-7 Jan 2020) University of Agricultural Sciences, Bangalore.

B Andallu, Shobha I R, Bioactivity (in vitro) of luteolin-6c-glucoside isolated from aniseeds (Pimpinella anisum L.) **107th Indian Science Congress** (3-7 Jan 2020) University of Agricultural Sciences, Bangalore.

Management & Commerce

Publications in Peer Reviewed Journals

Vijaya Sunder M, Sanjay Mahalingam, Sai Nikhil Krishna M, Improving patients' satisfaction in a mobile hospital using Lean Six Sigma - a design-thinking intervention, **Production Planning and Control**, 31(6), 512-526, (2020).

G V Muralidhara, Sayee Manohar Krishnamurthy, Zomato: Can It Win the Battle for Leadership in India's Food Tech Market?, **IBS Case Development Center (2019)**.

Articles

N Sivakumar, The Power of Spirituality in Business, **Business India**, pp193-194, August, (2019).

Economics

Publications in Peer Reviewed Journals

Sparsh Thakur, Raghavender Raju G, Accumulation, Adequacy and Utilisation of India's Foreign Exchange Reserves, **Journal of Economic Policy and Research**, 14(1), 2-17, (2019).

Sivakiran Guptha, R Prabhakar Rao, Analysis of Stock Market Efficiency in Emerging Markets: Evidence from BRICS, **The Romanian Economic Journal**, 22(72), 60-77, (2019).

M Mallikarjuna, R Prabhakara Rao, Application of Data Mining Techniques to Classify World Stock Markets, **International Journal of Emerging Trends in Engineering Research**, 8(1), 46-53, (2020).

Sayel Basel, K U Gopakumar, R Prabhakara Rao, Broad-based

index for measurement of development, *Journal of Social and Economic Development*, 22, 182-206, (2020).

M Mallikarjuna, R Prabhakara Rao, Evaluation of forecasting methods from selected stock market returns, *Financial Innovation*, 5(40), 1-16, (2019).

Sivakiran Guptha K, Prabhakar Rao R, GARCH based VaR estimation: An empirical evidence from BRICS stock markets, *Theoretical and Applied Economics*, 26(4), 201-218, (2019).

R Prabhakar Rao, Brajendra C Sutradhar, Multiple Categorical Covariates-Based Multinomial Dynamic Response Model, *Sankhya A: The Indian Journal of Statistics*, 82(1), 186-219, (2020).

Arunsai Rankireddy, M Mallikarjuna, R Prabhakara Rao, Sectoral Analysis of the Indian Stock Market: A Network Algorithm Perspective, *International Journal of Business Insights and Transformation*, 13(1), 20-32, (2020).

Sivakiran Guptha K, Prabhakar Rao R, Stock Market Volatility and Mean Reversion of BRICS Before and After Global Financial Crisis, *Journal of Academic Research In Economics*, 11(2), 330-354, (2019).

Rajbhushan J Nayak, V Pandit, Rajendra N Parmanik, Sustainability of Public Debt: An Analytical Framework, *Arthavijnana*, 61(3), 239-260, (2019).

Sayel Basel, Gopakumar K U, R Prabhakara Rao, Testing club convergence of economies by using a Broad-Based Development Index, *GeoJournal*, (2020).

M Sri Saikiran, M Mallikarjuna, R Prabhakara Rao, Testing the Weak-form Efficiency of BRICS Stock Markets, *Asian Journal of Economics, Finance And Management*, 1(3), 115-223, (2019).

M Mallikarjuna, R Prabhakara Rao, Volatility experience of major world stock markets, *Theoretical and Applied Economics*, 26(4), 35-52, (2019).

Education

Publications in Peer Reviewed Journals

Miss Supriya C P, Prof. Madhu Kapani, An exploration on the various strategies for implementing Peace Education among Adolescents, *Scholarly Research Journal for Interdisciplinary Studies*, 7(57), 13431-13444, (2020).

Conference Presentations / Proceedings

Madhu Kapani, Sri Sathya Sai system of Integral Education: The path to Transformation and Sustainability, *IATE National seminar 2020 on Education for Social Inclusion, Sustainable Development and Empowerment* (27-28 Jan 2020) Ravenshaw University, Cuttack, Odisha.

English Language & Literature

Publications in Peer Reviewed Journals

Dhantal Smita, Rani P L, Black Beauty Through the Anthropomorphic Lens, *Asian Quarterly: An International Journal of Contemporary Issues*, 17(2), 193-202, (2019).

Siddhartha R, Rani P L, Cricket as a Cultural Phenomenon in British India, *Journal of Literary and Cultural Studies*, 1(1), 119-128, (2020).

B Venkataramana, Death as a major preoccupation: Art and themes in Keats poetry, *International Journal of Research and Analytical Reviews*, 6(2), 800-805, (2019).

B Venkataramana, The Byronic Temper and Byronism, *The Indian Review of World Literature in English*, 16(1), 1-5, (2020).

Shivam Tamang, Arun Behera, Dramatic Devices in Arms and the Man, *International Journal of English Literature & Culture*, 8(2), 35-37, (2020).

Rath Tapan, Arun Behera, Manoeuvring Indigenous Literature in English Language Teaching Classes, *The Dawn Journal*, 9(2), 1442-1447, (2020).

Arun Behera, Anomalies between Orthography and Pronunciation in English and Suggestions to Mitigate the Problems, *International Journal of Linguistics & Computational Applications*, 7(1), 1-4, (2020).

Prashant Luthra, Rajeshwari C Patel, Revisiting the moral approach to the study of fiction, *Research Journal of English Language and Literature (RJELAL)*, 8(2), 123-131, (2020).

Swathi Metla, Rajeshwari C Patel, Prejudice and Violence in the Potterverse, *International Research Journal of Management, Sociology and Humanities*, 10(11), 233-245, (2019).

Swathi Metla, Social Markers and Gender in the Harry Potter Series, *International Journal of Creative Research Thoughts (IJCRT)*, 8(4), 3404-3413, (2020).

Swathi Metla, The Conflicting Contradictions and Philosophical Musings in Keshava Reddy's He Conquered the Jungle, *Purakala (UGC Care Journal)*, 31(18), 560-573, (2020).

Swathi Metla, The study of April Raintree as a Struggle for Positive Self-image and Realisation, *Studies in Indian Place Names (UGC Care journal)*, 40(71), 1754-66, (2020).

Swathi Metla, The Heroism in Tolkien's The Hobbit, *Studies in Indian Place Names (UGC Care journal)*, 40(76), 773-782, (2020).

Conference Presentations / Proceedings

Dibba Bhargavi, Who is the Master?: An Understanding of The Message to the Planet in the Indian Context, **Iris Murdoch Centenary Conference** (13-15 Jul 2019), St Anne's College, University of Oxford, U.K.

Ponapalli Prasanti Prabha, Meandering through the Web of Illusion: Bruno's Dream from an Indian Perspective, **Iris Murdoch Centenary Conference** (13-15 Jul 2019), St Anne's College, University of Oxford, U.K.

Swathi Metla, Study of April Raintree as a Quest for Identity and Freedom, **International Conference on Building Bridges of Friendship: Canada and India** (7-9 Jan 2020) Acharya Nagarjuna University, Guntur, Andhra Pradesh.

Swathi Metla, Rajeshwari C Patel, Politics of Image in Contemporary Culture, **International Seminar on Media Technologies and Accessibility: Politics, Representations and Paradigms** (21-22 Jan 2020), Pondicherry University, Puducherry.

Swathi Metla, Media as a Tool for Opinion-building in Popular Culture, **International Seminar on Media Technologies and Accessibility: Politics, Representations and Paradigms** (21-22 Jan 2020), Pondicherry University, Puducherry.

Swathi Metla, Heroism in Tolkien's The Hobbit, **International Conference on Enlightenment through English Language and Literature** (31 Jan 2020) Dhanalakshmi Srinivasan College of Arts and Science for Women, Perambalur, Tamil Nadu.

Swathi Metla, Smita Dhantal, Sociolinguistic Discourse Analysis of the Harry Potter Series and A Song of Ice and Fire, **International Seminar on Linguistics, Theories, Law, Life and Language** (11-13 Feb 2020) Osmania University, Hyderabad.

Arun Behera, Why do we pronounce certain sounds in a particular way and how can we fix it?, **IRDP Journals' Annual Conference 2019** (23 Feb 2020) Chennai.

Sub-Departments & Languages

Publications in Peer Reviewed Journals

Piyush Kumar Shrivastava, Bharat, **Sankalya**, 2(1), 22, (2019).

Piyush Kumar Shrivastava, Chunav, **Sankalya**, 1(31), 1, (2019).

Piyush Kumar Shrivastava, Hindustani Sainik Ke Paigam, Alagavvadiyon-Pakistan Ke Naam, **Sankalya**, 2(1), 23-24, (2019).

Kiron Bala Arora, Ekta Hai Prana Shakti, **Sankalya**, 10, 17-18, (2019).

R Visveswar, Huguenots and the conquest of Pondicherry by the Dutch, **Research Journey**, 162, 2, (2019).

R Visveswar, Nadars: A Journey from an Oppressed to an Advanced Caste, **Ajanta**, 8(2), 4, (2019).

Mahabala Rao M G, Veda Smrutishu Bhoo - Jalandirvahana Vicharaaha Tasya Prastutopayogancha, **International Journal of Sanskrit Research**, 6(2), 165-169, (2020).

M B S S Narayana, Maaya Shakti niropakam saakteya Saiva nirnaayakam brahmarshi Tadeipalli Raghava Narayana Sastribhihi krutam - Matswapnaha, grandha sameeskanam, **International Journal of Sanskrit Research**, 6(1), 133-136, (2019).

N Venkatesha Rao, Charming description of rivers in Vadiraja's works, **International Journal of Sanskrit Research**, 6(2), 157-159, (2020).

N Venkatesha Rao, Koruk, **International Journal of Sanskrit Research**, 6(2), 287-292, (2020).

N Venkatesha Rao, Vidya vinaya samarasyam, **International Journal of Sanskrit Research**, 6(2), 93-97, (2020).

N Venkatesha Rao, Brahma sutre Janmadhkarane adi padarthah, **Hitaya**, 2(2), (2020).

Articles / Translations

M Praphulla, Tirumala Daivam Paradaivatham Naha (Translation from Telugu to Sanskrit), **Sapthagiri**, 6(6), 15-18, (2019).

M Praphulla, Bhagavadgeetha Yuvatha: Manonigrahasya Maargah (Translation from Telugu to Sanskrit), **Sapthagiri**, 6(7), 10, (2019).

M Praphulla, Bhagavadgeetha Yuvatha: Eshah Karmabhoomihi (Translation from Telugu to Sanskrit), **Sapthagiri**, 7(1), 10, (2020).

M Praphulla, Bhagavadgeetha Yuvatha: Thava Sukhaduhkhayoh thvameva karanam (Translation from Telugu to Sanskrit), **Sapthagiri**, 6(12), (2020).



Special Annual Events

There are four special annual events that relate to the devotional, cultural, physical and service dimensions of the model of Sri Sathya Sai Values-based Integral education. These marquee events are orchestrated to bring out the latent values and good qualities in students and teachers. A lot of planning and effort goes into each of these events. Students participate in these events in accordance with their individual skills and talents.

Summer Course in Indian Culture & Spirituality

13-15 June 2019

Man can make genuine progress only when the idea that education is for earning a living is given up. Only one who realises this truth is a truly educated person. Knowledge does not mean mere booklore. It is not the transference of the contents of books to the brain.

Education is intended for the transformation of the heart. Man today is proud about the little knowledge he has acquired about the physical world and boasts that he knows all about the universe. True knowledge is that which establishes harmony and synthesis between science on the one hand and spirituality and ethics on the other. Man, therefore, should at the outset determine the true value of education.

Sri Sathya Sai Baba

Revered Founder Chancellor, SSSIHL

Benedictory Address, SSSIHL Annual Convocation, 22 Nov 1985

The Summer Course in Indian Culture & Spirituality serves as an induction programme to all students and teachers of Sri Sathya Sai Institute of Higher Learning with an objective to expose students of the University to the rich cultural and spiritual heritage of Bharat. It orients students into Bhagawan Baba's educational philosophy and gives them deep, first hand insights into how they can directly benefit from this unique institution.

During the academic year 2019/20, the event was held at each of the four campuses of SSSIHL - Prasanthi Nilayam, Anantapur, Brindavan and Muddenahalli - from 13 to 15 June 2019.

All students and teachers of the University participated, along with several invited guest speakers. On display was a smorgasbord of creative and engaging topics, discussions, talks, singing, chanting and quizzes - each purposefully curated

to imbibe in students the key teachings on Indian culture and spirituality from the ancient scriptures and Sai literature.

Some of these included:

Quiz on Great Epics of Indian Culture, Swami's Guidelines for good living, Bhagawan on the significance of the Summer Course, Divine Directions and their practical implementation in our daily life, Lessons from the Bhagavatam, Panel Discussion on Indian Culture and Spirituality, Sri Rama and Sai Rama, Importance of Vedic Literature in Indian culture, Impact of Bhagawan and the Sri Sathya Sai System of Education, Spirituality in Daily Life, Sarva Karma Bhagavath Prityartham - Lessons from our scriptures, Self-Image and Positive Psychology, Head in the forest, hands in the society - Lessons from the Bhagavad Gita, Help Ever Hurt Never; Role of Discipline, Duty & Devotion in the development of Personality of a student, Workshop on devotional singing, Sadhana and Seva, Food Habits and Health, The profound Truths in Hindu Mythology, The science behind ancient Bharatiya traditions and practices, The inner connect with Bhagawan

Prasanthi Vidwan Mahasabha

2-8 October 2019

Dasara or Navaratri is a ten-day festival, usually falling in the month of October, and is celebrated all over India in the worship of the Divine as the Mother principle. Since the early sixties, the festival of Dasara in Prasanthi Nilayam has been closely associated with the Veda Purusha Saptaha Jnana Yagna. This yagnam is a week-long worship conducted in the Divine Presence in the Poornachandra Auditorium in Prasanthi Nilayam each year for the welfare of the whole world. The yagnam commences on the fourth day of Dasara and concludes with the Poornahuti - the final oblation that is offered on Vijayadasami, the tenth day.

In addition to other rituals, the most important component of the yagnam is the Rudra yagam where the oblations are made in the Yagna Kunda to Lord Shiva while chanting hymns from the Sri Rudram. The students of Sri Sathya Sai Institute of Higher Learning take active part by chanting the vedas, reading the scriptures and performing other parts of the worship along with the learned pundits.

The evening programmes during the seven days of the yagnam are held in Sai Kulwant Hall, under the auspices of the 'Prasanthi Vidwan Mahasabha', where many speakers—primarily students and functionaries of Bhagawan's educational institutions—address the gathering on topics concerning spirituality and philosophy, Bhagawan's teachings and experiences of devotees.

Annual Convocation

22 November 2019

Sri Sathya Sai Institute of Higher Learning (SSSIHL) (Deemed to be University) held its 38th Annual Convocation at Sai Kulwant Hall, Prasanthi Nilayam, Andhra Pradesh in the Divine Presence on 22 November 2019 at 3:20 p.m.

The grand ceremony saw the Honourable Chancellor, Sri K Chakravarthi, IAS (Retd.), admit 470 candidates to their degrees. This included 277 undergraduate, 97 postgraduate, 86 professional and 10 Ph.D. awardees.

SSSIHL was honoured to have Dr. G Satheesh Reddy, Secretary, Department of Defence R&D, Government of India, Chairman, Defence Research and Development Organisation (DRDO) and Director General, Aeronautical Development Agency (ADA), as the chief guest for the event.

The format, planning and execution of the SSSIHL convocation ceremony is second to none. The ceremonial procession was led by the University brass band, two students carrying the University Standards on either side of the Registrar (who carried the Ceremonial Mace). Other members of the procession included the Chancellor, Vice-Chancellor, Deans and the Heads of Departments along with the Chief Guest, members of the Sri Sathya Sai Central Trust and the Board of Management.

Following the invocatory veda chanting, the Vice-Chancellor, Prof. K B R Varma prayed to the Revered Founder Chancellor to declare the convocation open. The Convocation was then declared open in the Divine voice of Bhagawan Baba.

The programme included speeches by the Vice-Chancellor, the Chief Guest and the Revered Founder Chancellor (video broadcast of a previous Convocation Address).

Annual Convocation Drama

Each year on the day of the Annual convocation, students of Sri Sathya Sai Institute of Higher Learning put together a drama presentation in the Divine Presence. This year, the drama, titled Hum Chalein teri Roshani se, explored the grey areas of major decision points all of us face in life. The ones that ask us to choose between what is right and what is wrong.

The drama explored this juxtaposition perfectly through the context of a consulting firm where one person's principles helped pave the way for right choices of many a fellow journeyman. This person, Roshan Damodar Salve, an investment banker at FinVest Ltd., time and again chose gratitude over gratification by refusing to give in to the expectations of the crowd and pave his own reality, vested in his inner truth.

It highlighted the fact that If our heart knows how to act in a situation and we must choose the right path, we will garner the courage, the right mindset and channelize the inner wisdom that will lead us on the path of dharma or right action.

Perhaps it's time we truly honour the age-old adage: the only way to lead is by example. If we do that, we never know what pertinent message Roshan's life might hold for us!





The full list of medallists for the academic year 2019/20, honoured during the Annual Convocation 2019 is given below.

All-Round Gold Medallists

Maddireddy Meghana

Anantapur Campus - Master of Business Administration

R Sai Naveen

Prasanthi Nilayam Campus - Master of Business Administration

Ramavarapu Sathya Sai Aditya

Brindavan Campus - Bachelor of Commerce (Honours)

Chikkam Sai Phani Kumar

Muddenahalli Campus - Bachelor of Business Administration

Gold Medallists

Manasali Sai Kumar

Master of Business Administration

Varshaneya V

Master of Technology in Computer Science

Shyam Sundar B

Master of Technology in Optoelectronics and Communications

Pradyumna M

Master of Science in Mathematics

K Karthik Subramaniam

Master of Science in Biosciences

Hariharan M

Master of Science in Chemistry

J Kaushik

Master of Science in Physics

Sai Shravan N

Master of Arts in Economics

T R Sai Natarajan

Integrated Master of Computer Applications

Sasanpuri Maniram Santosh

Bachelor of Business Administration

Boddu Raghu Veera Saikumar

Bachelor of Commerce (Honours)

Majeti VSSS Durgesh

Bachelor of Computer Applications

Debashis Parida

Bachelor of Science (Honours) in Physics

Jashobanta Behera

Bachelor of Science (Honours) in Biosciences

Palla Juneswari

Bachelor of Education

Kavugoli Shraddha Mohan

Master of Science in Food and Nutritional Sciences

Gayathri V R

Bachelor of Science in Food and Nutritional Sciences

Soumya Yellai

Bachelor of Science (Honours) in Mathematics

Haritha Ramann

Bachelor of Science (Honours) in Chemistry

Mathumitha R

Bachelor of Arts

Ph.D. Awardees

Sri Hari N - Physics

Design and fabrication of low-cost Optical Coherence Tomography instruments with novel features towards aiding in medical diagnostics

Sri Sadhu Sai Pavan Prashanth - Physics

Investigations into the Structural, Dielectric, Piezoelectric, Ferroelectric and Nonlinear Optical Properties of $\text{Ba}_{0.85}\text{Ca}_{0.15}\text{Zr}_{0.1}\text{Ti}_{0.9}\text{O}_3$ in Different Configurations

Sri Muralikrishna Molli - Physics

Nonlinear Optical Absorption Characteristics of Metal Selenides

Sri Gannavarapu Krishna Prasad - Chemistry

Synthesis of Bio-nanocomposites for Applications in Electrochemical Energy Storage, Sensing and Catalysis

Sri Chelli Sai Manohar - Chemistry

Synthetic and in silico strategies for designing drugs, probing sensing mechanisms and optimizing novel HA-BCZT piezo-materials for bone regeneration

Sri Aiyyer Kartik Satyanarayan - Biosciences

Assessing Microbial Electron Transfer Activity and Biofilm Formation for Wastewater Treatment in Microbial Fuel Cells

Sri Girish T N - Biosciences

Thermal and Humidity Stress Adaptations of Select *Drosophila* Species Endemic to Indian Tropics

Sri Rajabushan Jagadish Nayak - Economics

Fiscal Consolidation and Sustainable Public Debt: A Case Study of India

Miss Nelli Vani Sri - English Literature

Text and Subtext: A Study of Select Plays of Ivan Turgenev and Anton Chekhov

Sri Siddhartha R - English Literature

From the Colonial to the Carnival: A Study of the Trajectory of Indian Cricket from the Post-Colonial and the Bakhtinian Perspectives



Annual Sports & Cultural Meet

11-15 January 2020

The Sri Sathya Sai Educational Institutions held the main event of the Annual Sports & Cultural Meet on 11 January 2020 at Sri Sathya Sai Hill View Stadium, Prasanthi Nilayam, Andhra Pradesh, India.

The event is a culmination of various sports, cultural and fine arts competitions held at all campuses of the University and other Sai educational institutions throughout the academic year. The Sri Sathya Sai educational institutions include all the four campuses of Sri Sathya Sai Institute of Higher Learning, Sri Sathya Sai



Primary and Higher Secondary School, Smt. Eswaramma High School and Sri Sathya Sai Institute of Higher Medical Sciences (SSSIHMS) College of Nursing and Allied Health Sciences.

It showcases an array of physical and cultural presentations by over 3000 students of the institutions spread across two sessions, morning and evening. Preparations, which began a month in advance, involved hundreds of practice hours by all students and teachers at each institution.

Process over outcome

The Annual Sports & Cultural Meet brings to the fore several qualities of human excellence in students. With only a few weeks to perfect their presentations, and with academics and other daily pursuits, students have to make every minute of preparation count. Very quickly, students need to have clarity of their outcomes, work in teams with unity (often with colleagues they have never worked with before), surmount the mental and physical obstacles that may seem impossible, and so on.

All this is accomplished on a shoestring budget that leaves the teams to make their final props and other event items with available and existing resources at the hostel. It not only helps them be thrifty, but forces them to think out of the box and bring in an element of creativity that challenges their current model of the world and pushes their comfort zones.

This process is one of several ways through which the conscious experiment of man-making and character building at Sai educational institutions truly succeeds. It prepares SSSIHL students to navigate the toughest of situations without sacrificing their values. At the same time, it helps build strong inner qualities such as a sense of unity and teamwork, determination, discipline and hard work.

The cherry on the cake, however, is the immense love students have for Bhagawan Sri Sathya Sai Baba, their Divine Master. For Sai students, the entire gamut of the Annual Sports and Cultural Meet boils down to this singular focus. Bhagawan Baba—with His divine vision—reciprocates this and makes sure that these pure feelings of Love are translated into the pursuit of excellence in every facet of the students' evolution.

As He often said, The End of Culture is Perfection.

Sports Meet Presentations

11 Jan 2020

Anantapur, Prasanthi Nilayam, Brindavan and Muddenahalli Campuses presentations: Aerials, Human Pyramids, Graceful Rhythmic Drill, Luminous Display, Bike Stunts: Ascenders, Hip-hop Dancers, Roller Skating: 24 Inliners, Drums: Big Bang, Kalari Commandos, Sumos, Hipsters, Impavidos Reborn, Shotokan Warriors, Saibots, Acrophiles, Dynamic Jugglers, Acroyoga, Hidden Hands and Cowboys

Cultural Meet Presentations

12-15 Jan 2020

- o Drama presentation by students of the Brindavan Campus: Sant Ramdev
- o Drama presentation by students of the Muddenahalli Campus: Mine to Thine
- o Drama presentation by students of the Prasanthi Nilayam Campus: Sarvam Krishnamayam

Prize Distribution Ceremony

15 Jan 2020

The Prize Distribution Ceremony celebrated the excellent performances in sports and cultural events during the Annual Sports and Cultural Meet and during the academic year 2019/20 by students of each Sai educational institution.

Followed by a series of talks by a teacher and students from each SSSIHL campus highlighting the significance of the event, prizes and cups were awarded to the students of all Sai educational institutions that excelled in individual and team events for sports, cultural and fine arts performances at their respective establishments. The ceremony ended with a Divine Benediction by Bhagawan Baba.

Athletic Champions

Tokalapalli Adireddy Gari Vandana

Postgraduate, Anantapur Campus

Kesavani Netheti

Undergraduate, Anantapur Campus

Thota Sujendra

Postgraduate, Prasanthi Nilayam Campus

Sridhar Sola

Undergraduate, Prasanthi Nilayam Campus

Saurabh Suman

Brindavan Campus

Samir Kumar Majhi

Muddenahalli Campus

Cultural Champions

Pokuri Sai Punitha

Postgraduate, Anantapur Campus

Ketki Tripathi

Undergraduate, Anantapur Campus

Charan Sai Ramireddi

Postgraduate, Prasanthi Nilayam Campus

Vedant Monger

Undergraduate, Prasanthi Nilayam Campus

S Sai Shriram

Brindavan Campus

Bhatt Janak Ashwin

Muddenahalli Campus

Fine Arts Champions

Sumani Rai

Postgraduate, Anantapur Campus

Pragati Gupta

Undergraduate, Anantapur Campus



Community Service

Each year, students and teachers of the University work with local communities around the campuses throughout the year. Many of these service activities are initiatives by students themselves. Inspired by the example and precepts of our Revered Founder Chancellor, Bhagawan Sri Sathya Sai Baba, they reflect the impact of the unique blend of secular and spiritual education they receive here. Examples of these from 2019/20 include:

Narayana Seva

Anantapur Campus, every month

Each month, food packets are distributed to the needy poor in the slums around Anantapur town. The monthly Narayana Seva activity sees a team of cooks, campus workers, rickshaw drivers and students come together to deliver 25 kg of Pulihora (approximately 270-300 packets) to these marginalized citizens of society. The impact of this programme goes a long way in the lives of students. As alumni, they continue this activity, both at a large and small scale.

Adoption of Leper Colony

Anantapur Campus, 1986 to date

The students and staff of the Anantapur Campus hostel have adopted a leper colony situated in the outskirts of the town of Anantapur since 1986, with the objective of making the inmates of the colony as self-sufficient as possible. The grand old project, Project Love Stream, is etched in the memory of many a student as an example of service in action and how a little love and care has the power to create long lasting benefits to generations of families.

As part of the project, each year, the students of the Campus make a variety of handicrafts like cards, bookmarks, rakhis and friendship bands. These are then sold to the inmates of the hostel and the amount thus raised is utilized to buy provisions for the residents of the leper colony on a monthly basis. In 2019/20, monthly provisions were regularly distributed to the inmates.

Celebrating Christmas with village children

Muddenahalli Campus, Christmas 2019

For some years now, on the morning of 25 December, the students of the Campus visit Muddenahalli village for Christmas celebrations. They begin with nagar sankeertan from the hostel, and make their way to the village. They then offer lighted candles to the children who participate in the bhajan session held at the local Hanuman temple. After the prayers, all the village children are offered chocolates as Christmas gifts, giving a lot of joy and pleasure to both the village kids as well as the students themselves.

Old Age Home Visit

Muddenahalli Campus, Jul and Nov 2019

Another staple yearly service is the scheduled visit to Sai Dwarakamayee Vriddhashrama, an old age home at Sultanpet, Nandi village, about four kilometres from Muddenahalli. The resident population has now swelled to about fifty residents.

After a half hour bhajan session, the students spent about an hour interacting with the aged elders, during which they sang songs and listened to the experiences of the residents. The elders too enthusiastically sang and talked to the young students. For those residents who could not come to the prayer hall, the students visited them in their living rooms. The visit taught students, especially freshers, the value of empathy and respect for elders. They were emotionally touched after listening to the stories of the elders.

Aradhana Day Seva

Brindavan Campus, 24 Apr 2020

Amidst the COVID-19 lockdown, students of the campus with the help of alumni served prasadam (in the form of food packets) to 900 people in Kadugodi village. Cooking commenced at 3 a.m. followed by packing, transportation and organized distribution. In addition to this, ashram workers and their families were given new clothes.

The 'Bring Back Chitravati to its Glory' campaign

Prasanthi Nilayam Campus, 15 Nov 2019

As part of an ongoing organised effort between the University and local authorities to bring back the sacred River Chitravati to its glory, postgraduate students of the campus cleaned parts of the ghat and planted scores of trees along the Chitravati River. The local community also got involved, including the Commissioner himself.

"This has helped me relate firsthand to the needs of the community. We experienced the theoretical aspects of our Rural Management course today," said a student.

Grama Seva

Prasanthi Nilayam Campus, Academic Year 2019/20

#GramaSeva

Initiate. Serve. Love. Repeat.

Teams of students, doctoral research scholars and teachers visited all the three villages again to continue their work from the previous academic year.

At the village of Narsimpalli, students and teachers responded to

the requests of village folk in providing upgradations to the existing dilapidated government school. They began with essential plumbing work (taps, pipelines, etc.) and worked with the village mason and others to facilitate further work. Later on, in December 2019, students mapped and geotagged major areas of the village (for cartographic reasons and identification of issues). In addition, they undertook the restoration of the Anganwadi (rural child care centre): A complete paint job, installation of new toilets, cleaning the septic tank, installation of an overhead water tank (1000 liters) and new electrical wiring for all the rooms (with energy-conserving LED light fittings).

At Bonthalapalli, students took on the challenge of reducing unemployment of the village youth. They highlighted the need for better skills to get actively employed. After conducting thorough interviews of the twenty unemployed youth of the village and assessing their current educational qualifications, skill sets, etc., they then went back with consolidated data and actively worked with them to teach the required set of soft skills, thus enhancing their employability.

At Marlapalli, under the Education module, students of Std. IV-VI were trained in basic reading skills. Students of Std. VII were involved in a host of Mathematical activities. Other activities include making of Bank books, learning basic music skills and Yoga asanas. Separately, medical data of 78 village elders was collected and students of the M.Tech. in Computer Science programme employed their data mining skills and came up with a follow-up plan (including predictive measures) for the next action steps.

Love All, Serve All, as our Revered Founder Chancellor always taught us.





© content, design & desktop publishing
Sri Sathya Sai Institute of Higher Learning

The Office of the Registrar, Administrative Building
Sri Sathya Sai Institute of Higher Learning
Prasanthi Nilayam - 515 134
Dist. Anantapur, Andhra Pradesh, India

+91 8555 287 239 | registrar@sssihl.edu.in | sssihl.edu.in

Printed by Sessaasai Business Forms Pvt. Ltd.

9, Lalwani Industrial Estate, 14 Katrak Road
Wadala, Mumbai - 400 031, India

+91 22 66270946 | marketing@seshaasai.com | seshaasai.com

Dear students!

Be like the star which never wavers from the crescent but is fixed in steady faith.

When the sun is over your head; there will be no shadow; so too when faith is steady in your heart; it should not cast any shadow of doubt.

Do not talk ill of others; talk only of the good in them; all are good; if you see bad in them, it is because there is bad in you; if you do not like someone, do not mix with him.

Grace is the sunlight which will ripen the fruit; sadhana is the sap which rises from earth. Both are needed by the tree in order that it may yield fruit.

With Blessings
Baba.



sssihl.edu.in

The end of knowledge is Freedom
SRI SATHYA SAI BABA