

Kristu Jayanti College, Autonomous K. Narayanapura, Kothanur P.O., Bengaluru-560 077, Karnataka, India. Tel : 080-28465611, 28465353, 28465770, Fax : 080-28445161 | E-mail : info@kristujayanti.com | www.kristujayanti.edu.in Kristu Jayanti College (Autonomous) Bengaluru is awarded

# 🕻 🗛 + + Grade 🥻

in the 3<sup>rd</sup> Cycle of Assessment and Accreditation by NAAC with a CGPA of 3.78 out of 4

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# FROM THE EDITORIAL TEAM

Dear Readers,

Welcome to 2022 issue of Interface, the Computer Science Department's Newsletter.

This issue covers all the activities happened in the department in the year 2021. The department witnessed a plethora of activities ranging from organising conferences and exhibitions ,going for industrial visits ,conducting workshops, social outreach programs to name a few. As the editors, we have tried to bring a glimpse on each of the programmes organised by the department. Due care is made to highlight the essence of each programme. Apart from reports about the various activities, the newsletter includes articles contributed by students, faculty members and alumni.

We would like to thank all the people who contributed in bringing out this issue.

We hope that you will enjoy reading this issue.

Editorial Team.

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# **EDITORIAL BOARD**

# **Chief Editors**

**Fr. Dr. Augustine George**, CMI Principal **Prof. Sevuga Pandian A** HOD, Computer Science

# **Staff Editors**

Ms. Mary Jacob Faculty, Department of Computer Science Ms. Anita C Faculty, Department of Computer Science

# MESSAGE



Fr. Dr. Augustine George Principal

We live in a world where information and communication technology has transformed all walks of human life. The day to day activities are transformed with the involvement of technology. The infinite possibilities of information technology in seemingly helping the human life was witnessed during this COVID pandemic period.

The contribution of computational technology during this period by providing us with methods and means to carry out our daily lives is mind blowing. Continuous innovation and creativity has become the corner stones of success of any endeavor.

Computer Science department has always spearheaded the technological initiatives of the college. The students and faculty members were always quick in adopting new technological trends. The role of the department is commendable in establishing a robust IT infrastructure conducive for day to day academic learning and content delivery. The college has a well-established learning management system which was pivotal during the online learning period due to the pandemic restrictions. The department had always strived to impart a holistic education through its curriculum, various industry academia collaborations, skill development activities and social responsibility initiatives. Ample avenues are provided to the students to experiment and innovate throughout their academic journey at Kristu Jayanti College and the various academic platforms helps to kindle the curious minds to learn and innovate I congratulate the department in releasing the ninth edition of the Newsletter-Interface and wish them all success in their future creative endeavors.

#### **FROM THE DEAN**



Dr. Calistus Jude A.L. Dean, Sciences

It is a delight that the ninth edition of "Interface" - the newsletter of the Department of Computer Science (UG) highlighting the news and events, and views of our alumni and faculty members is being published. I appreciate the earnest endeavor of the department in organising various academic enrichment activities and co-curricular events during the academic year to create a holistic learning experience for the students. The department is one of the finest in offering the best learning experience for the students members, especially during the challenging times of the CoViD-19 pandemic. From its contribution in being ranked once again by the India Today MDRA Survey (2021) as the Best Emerging College in Science at the National Level to the top ranking of its programmes at the National and Regional levels, its collaboration with eminent institutions and industries for various academic enrichment programmes, to organizing certificate programmes exclusively for women students and many more, the Department has so much to be proud of. Our students have also brought incredible success to the department and our faculty members have celebrated many achievements.

This edition of Interface is sure to give a greater insight into the approaches to teaching and learning, and the various activities and achievements of the department and its members. I specially congratulate and thank the editorial team for their effort in bringing out this issue.

#### **ABOUT THE DEPARTMENT**



**Prof. Sevuga Pandian A** Head, Computer Science (UG)

The Department of Computer Science (UG) with its proud history spanning over two decades, stands topmost in the Nation for the BCA programme it offers. Both BCA, BCA Analytics, BSc CSMM, CSEL PHCS, PHEL, STMM and STEC programs are devised to provide an ideal amalgamation of theory with hands on experience for the students. Our students receive a broad education that includes a relevant contemporary industry related curriculum, excellent problem solving and communication skills, and the ability to work in cross-disciplinary teams enhancing their spirit of innovation and academic excellence.

The millennial generation of software developers is the future visionaries of companies and nations. To keep pace with rapid changes in the IT sector the

department has an auspicious club Computer Academy with more than 1250 members' attempts to confluence between the technology and academics through series of programmes like Guest lectures, Workshops, Seminars, Industrial Visit, Intra and Inter Collegiate fest, Science Exhibition and various communities.

The Department has initiated Academic Alliance with UiPath, SalesForce, Oracle Academy, Microsoft Dynamics Academic, ICT Academy, ACM-W, NPTEL, AWS Educate, Dell EMC, Palo Alto, Honeywell, SAP, Infosys and VMware IT Academy to craft initiatives to address the contemporary skill gap in the novel computing technologies. It helps to ensure the industry, a strong pipeline of graduates to meet its future needs. The department also has a Knowledge Kindle Groups and Common Interest Groups to allow the students to connect communicate and collaborate. The department encourages the students for extended learning process such as self-paced learning through various MOOC and NPTEL courses of their interest. During this new normal, challenges were accumulated in great numbers but the agility in taking decision to transit from physical to virtual classroom content delivery was very efficiently handled by designing our own in-house customized system called Kristu Jayanti Learning Management System (KJLMS), a web application that enables the teachers to create dynamic courses that extend learning to the students, anytime, anywhere. Irrespective of roles and permissions KJLMS meets all the requirements of the different stake holders. KJLMS provides extremely customizable environment for both Teaching and Learning. KJLMS facilitates the blended mode of teaching-learning process of both online and offline classes by organizing and executing the teaching and learning in a creative manner.

The shared values of our department are exemplified in various extension activities like Social Outreach Programme (SOP) and Computer Literacy Programme (CLP) providing the students an opportunity to recognize their social responsibility and contribute to the development of the society. I am proud to say that our BCA & B.Sc programmes are the best in the Nation due to its diligent adherence to quality in not just academics but also in creating the right impact on corporate sectors and national quality forums.

### **Academic Alliances**



# CONFERENCES

## Fourth National Level Virtual Conference on Computational Intelligence



The Fourth National Level Virtual Conference on Computational Intelligence (NCCI 2021) was hosted by the Department of Computer Science(UG) on  $11^{th}$  and  $12^{th}$  January, 2021.

The NCCI 2021 provided a forum for discussion of cuttingedge advancements, essential methodologies, research lines, difficulties, and unsolved open issues in the disciplines of Computational Intelligence. The chief guest for the inaugural session Prof. Valentina Emilia Balas, IEEE Senior Member, Department of Automation & Applied Informatics, Director of International Relations, Head of Intelligent Systems Research Centre "Aurel Vlaicu" University of Arad, Romania, spoke about her current research work in Renewable Energies and Passive Greenhouses in Romania



and France, emphasising the importance of Computational Intelligence.

In the first technical session on "Demystifying Data Science", Dr. Neha Sharma, Analytics & Insights, TCS, Pune, India, Founder Secretary, Society for Data Science, Senior & Execom Member, IEEE Pune Section, highlighted the core principles utilised in technology and how they relate to the greatest real-life examples, which are vital for comprehending technology. Dr. Calduwel Newton, Assistant Professor, Govt. Arts College, Trichy, Tamilnadu, and Dr. Murugantham, Associate Professor, Computer Science (PG), Kristu Jayanti College, Bengaluru, presided over the Track I Paper Presentation.

Mr. Vijayaraj Veeramani, Cloud Solution Leader - AP, IBM, Singapore, kicked off the second day of the conference with the third Technical session on "Real-Time Use - Cases of Big Data". Mr. Vijayaraj Veeramani discussed the real-world applications of Big data.

Track 2 Paper Presentation followed the technical session and was chaired by Dr. Ramkumar, Lecturer, Maldives, and Dr. Vinothina, Department of Computer Science (PG).

With more than 500 people attending the conference, 50 technical papers on various themes backed by Computational Intelligence received and with the authors presenting 23 of them, NCCI 21 was a great platform for the exchange of ideas amongst the researchers. All the accepted and presented papers were considered for publication in the ICTACT Journal.



#### National Conference on Theoretical and Applied Statistics



The Department of Statistics in association with National Statistical Office, Ministry of Statistics and Programme Implementation, Government of India , Bengaluru University and Bengaluru North University conducted a two-day National Conference on "Theoretical and Applied Statistics" (NCTAS) on 9th and 10th February, 2021.The NCTAS-2021 was aimed to bring together academic and industry researchers and practitioners who create and implement statistical and computational approaches for data science.

This conference provided a platform for people to share and discuss ideas for improving access to knowledge and fostering multi disciplinary cooperation. The chief guest of the inaugural session Dr. P T Subha, ISS, Deputy Director General, Zonal Office, Field Operations Division, National Statistics Office, M/o Statistics & Programme Implementation spoke on the Official Statistics published by government agencies or other public bodies such as international organizations as a public good on all major areas of economic and social development

He also discussed data depth applications in multivariate analysis, the DD-plot and its applications, the extension of the DD-plot for multi-sample problems, the scale curve and its applications, depth-based control charts, outlier detection, multivariate density estimation, regression, classification, and clustering.



The second session was on the "Time series models with stable innovations and their applications" led by Prof. N. Balakrishna, Department of Statistics, Cochin University of Science and Technology (CUSAT), Kochi. Dr. N. Balakrishna discussed time series models with stable innovations and their applications. Sir also discussed linear time series models like AR, MA, and ARMA. Dr.Shirke also proposed a recursive technique for g ts, and students to share and explore ideas to increase access to knowledge, encourage interdisciplinary collaborations, and learn through interaction with researchers, academicians, industrialists, and students. The success of the conference was marked with more than 40 articles being submitted to the conference describing notable breakthroughs in the field of statistics.



Virtual National Electronics Conference on Materials for Electronics Applications (NACMEA-2021)



The Virtual National Electronics Conference on "Materials for Electronics Applications (NACMEA-2021)", was hosted by the Department of Electronics on November 10, 2021. The conference's purpose was to bring together prominent academic scientists, researchers and research scholars from around the world to discuss their experiences and research findings on all parts. The conference's purpose was to bring together prominent academic scientists, researchers and research scholars from around the world to discuss their experiences and research findings on all parts of Basic Science and Material Sciences for Electronics applications.

The conference served as a top interdisciplinary venue for scholars and educators to debate and prevent the latest developments, trends, and issues.

On the theme of 'Nano-diamonds from low-quality coals and carbonaceous aerosols: environmental care and waste to riches,' Dr. Binoy K Saikia, Senior Scientist, CSIR-North East Institute of Science and Technology, Jorhat, Assam, led the first keynote session. Many of the participants, particularly those who were new to the subject, found this to be very informative and worthwhile.

Dr. S. K. Nataraj, Professor and Group Leader, Centre for Nano and Material Science, Jain University, Bengaluru, India, led the second keynote session, which centered on "Interdisciplinary Research on Materials Aiming Energy and Environmental Applications".

He expressed his ideas and opinions on the subject, as well as a few study findings. Dr. P. Kathirvel, Assistant Professor Department of Physics GRD, Centre for Materials Research PSG College of Technology, Peelamedu, Coimbatore, India, presented the third keynote session. The resource person shared his insights and experiences of his research on Flame Synthesis of Oxide Materials.

The conference's selected papers were published in IOP's Journal of Physics: Conference Series, which is indexed by Scopus, the world's biggest abstract and citation database for peer-reviewed research. Academicians and students were able to present and discuss the newest breakthroughs, trends, and concerns, as well as practical issues and solutions, at this important interdisciplinary meeting.



## Virtual National Conference on Recent Trends in Pure and Applied Mathematics



The Virtual National Conference on "Recent Trends in Pure and Applied Mathematics" was conducted by the Department of Mathematics, in collaboration with the Department of Mathematics of Bengaluru North University, on November 11 and 12, 2021.

The Chief Guest of the conference, Dr. Kumuda D, In-Charge Vice-Chancellor, Bengaluru North University, emphasised the significance of the National Conference to the student community and researchers in the current environment. Dr. Pradeep G. Siddheshwar, Senior Professor of Mathematics, Centre for Mathematical Needs, Department of Mathematics, Christ University, Bengaluru appreciated the conference's theme. In his keynote address he stated that the conference would focus on how pure mathematics becomes applied mathematics. Sir also spoke on the difficult differential equations and the mechanism of solving them.

The second keynote session was addressed by Dr Smita S Nagouda, Associate Professor, Centre for Mathematical Needs, Department of Mathematics, Christ University, Bengaluru. Dr.Smita spoke on the significance of using numerical methods to solve partial differential equations. She also briefed on the Keller Box approach.

Dr. Medha Itagi Huilgol, Associate Professor, Department of Mathematics, Bengaluru Central University, Bengaluru, presented the third key note session. Madam also spoke on the marker sets, marker set distance in graphs, their attributes, and applications.

The fourth keynote session was presented by Dr. Kanchana C., Research Expert, Instituto de Alta Investigación, Universidad de Tarapacá, Chile. Madam also provided an introduction to nanoparticles, the process inwhich they get manufactured, applications they have in industrial fluids, and how the presence of nanoparticles in the base fluids enhances thermal conductivity. Madam also spoke on the emerging research areas in nanotechnology.

The sixth keynote ssession was addressed by Dr. Nagaraja H G., Professor of Mathematics, Jnana Bharathi Campus, Bangalore University. Sir spoke on the process of solving partial differential equations and model boundary value problems. The the two-day National conference concluded with 34 paper presentations.

# International Virtual Conference on Recent Trends in Materials Science (IVCRTMS 2020)



The International Virtual Conference (IVCRTMS 2020) on 'Recent Trends in Materials Science' was hosted by the Department of Physics of Kristu Jayanti College, on 22<sup>nd</sup> October 2021. The goal of this virtual conference was to disseminate information in the fields of science and engineering. It was an occasion to reflect on what has been happening in the field of Science and Engineering, to exchange the researchers' experiences, viewpoints, and reactions to the issues they encounter and to chart new future directions.Prof. P. Ramaswamy, President, Indian Association for Crystal Growth and Dean-Research, SSN institutions, Chennai, Tamil Nadu spoke on the importance of materials science research in today's world and how it might be used to medicine. The conference had four technical keynote sessions. Dr.Muthu Senthil Pandian, Research Scientist, SSN Institutions, Chennai, Tamil Nadu, in the first technical session spoke on the development of large size and unidirectional organic nonlinear optical (NLO) single crystals for second harmonic generation (SHG) application. He also elaborated on the Sankara Narayana Ramaswamy method used for his research and unidirectional growth of NLO crystals and its uses.

The second keynote session on CZT semiconductor crystal growth and characteristics for gamma-ray detector applications, was led by Dr. M. Magesh, Research Associate, Institute of Material Research, Washington State University Pullam, USA. Dr.Magesh focussed on particle structure, preparation, necessity and properties. Prof. Ahmad I Ayesh, Professor of Physics, Department of Mathematics, Statistics & Physics Qatar University, Doha, Qatar, led the third keynote session on the topic 'Composite nanoparticles for sensitive detection of dangerous gases.' She discussed on composite nanoparticles and their use in the detection of hazardous gases. The session was quite participatory, and the speaker covered all the important concepts of the present times.

Prof. Teresa Cuberes, Professor of Applied Mechanics and Project Manager of Engineering at the University of Castilla-La Mancha in Spain, elaborated on Composite nanoparticles for sensitive detection of dangerous gases. She also shared her research and life experiences. More than 160 participants from across the globe attended the conference and a total of 26 technical papers on various issues in materials science were received, with the authors presenting 21 of them. All accepted and piecented papers was published in the IOP Conference Series: Material Science and Engineering (indexed by Scopus) and the International Journal of Scientific and Engineering Research. ICRTMS 2021 provided an excellent forum for discussing recent developments in materials science, sharing experiences, viewpoints, and reactions to issues faced by academics, and setting new goals for the future. The conference aimed to shape society's future through materials research, as well as to foster cross-disciplinary approaches to science and engineering.

# SYNCHRONIZE 2021



SYNCHRONIZE is the intra-collegiate fest organized by the final year students of BCA, B.Sc. for their juniors, which provides them an opportunity to organize, participate and showcase their potentials. The theme for SYNCHRONIZE 2021 was Blockchain technology. The students were grouped into 6 teams named after the Blockchain technology, namely – Consortium, Ethereum, Monero, Vyper, Invariant, and Zeppelin. The fest offered events in all the foundation subjects like Mathematics, Statistics, Electronics and Physics, so that students could exhibit their skills and be inspired. The 10 events of Synchronize 2021 were named based on the Blockchain technology.

Our students left no stones unturned and participated in a synchronized manner in all the events of the Intra Collegiate IT fest, making the total participation of 201 students competing for the 10 events. The preliminary rounds were conducted from 4th October to 7th October 2021, through Auto-Proctoring Google Forms and the website 'Quizzez', and 62 students were selected for the final round. The last round of events were conducted through HackerRank and other modes enabled on zoom platform.

Synchronize 2021 was inaugurated with the virtual lighting of the lamp developed by the students of Computer Science on 8th October 2021. Rev Dr. Augustine George, Principal of the College, presided over the inauguration. He stressed on the importance of embedding technology in campus.

The Chief Guest of the Inaugural session Mr. Shantnoo Saxsena, Founder, Encryptus, emphasized on the factor that innovation is the call for modernization and that it is attitude and constant learning which determines our destiny. The Guest of Honour, Ms. Janis D'Souza, Head of Marketing, Encryptus, highlighted on the need of dynamic youth who are ready to take up responsibilities in the present time.

The Fest Prelude was delivered by Prof. Ramanathan G, Coordinator, Computer Academy. The Inaugural session was followed by the final rounds of Physics event, Statistics event, Maths event, and Electronics event which was held offline. The fest concluded with the Valedictory Ceremony which was presided over by Rev. Fr. Lijo P Thomas, Financial Administrator. The final report of Synchronise 2021 was presented by Prof. Divya K S, Coordinator, Computer Academy. The ceremony concluded with the announcement and appreciation to the winners of the events of Synchronize 2021.



Xactitude 2021 is the annual Science and Technology festival organized by the Department of Computer Science, Kristu Jayanti College. Xactitude 2021 is one such platform organized by computer Academy, the IT club of the department, where students from various institutions across the country are encouraged to exhibit and showcase their technical talent.

The event was organised in the virtual mode by the team lead by Faculty Co-ordinators Dr.K.Kalaiselvi and Dr.Dalvin Vinod Kumar, student co-ordinators Mr.Ashwin Kumar of VIB.Sc CMSE, Ms. Siddi Agarwalof VIBCAAnalytics.ThecomputeracademytookupRobotic Process Automation (RPA) as a core theme for the year's academic events. The events were named after the robotic process. Knowledge Agent (IT Quiz),Wintask (Coding & Debugging event),Solvexia (Mathematics event), Botstatz(Statistics event),Electroneek (Electronics event),Xcelerator One (Physics Event).



All accepted and presented papers was published in the IOP Conference Series: Material Science and Engineering (indexed by Scopus) and the International Journal of Scientific and Engineering Research. ICRTMS 2021 provided an excellent forum for discussing recent developments in materials science, sharing experiences, viewpoints, and reactions to issues faced by academics, and setting new goals for the future.

The conference aimed to shape society's future through materials research, as well as to foster cross-disciplinary approaches to science and engineering. The participants from across the country participated in all the events in the virtual mode and was one of the first of its kind in the department of Computer Science. 126 participants registered for the fest from 16 colleges across India, for all the 6 events. The events were conductedd through auto proctored google forms, workbench, hacker rank enabled with zoom platform.

Xactitude 2021 was inaugurated with a virtual lighting of the lamp developed by Computer Academy on 11th February. The inauguration was presided by Rev Dr. Augustine George Principal of the College. During the presidential address father insisted that the Jayantians should adapt to the changing environment. The chief guest for the inaugural session was Mr.Ajith Mathew George, CoFounder Sysfore Technologies, Bangalore.

Mr.Ajith emphasised on the future of work and the sustainability in the IT industry. He insisted that the students should develop indigenous products that are home grown which would uplift our nation globally. The department newsletter 'Interface' was released during the event by the principal, which portrays the departmental activities and achievements of the completed academic year.



**GUEST LECTURES** 

**Guest Lecture on Cloud Computing** 



Guest Lecture on Cloud Computing was organised online using the zoom platform for Fifth semester BCA students on 4<sup>th</sup> September 2021,8.30 AM to 9.30 AM. The resource person for the guest talk was Mr. Arun Kumar, Consultant, Deloitte. He briefed on the different types of cloud and the various services provided by the cloud providers. The speaker also spoke on the data backup, disaster recovery, and business continuity highlighting the benefits of cloud usage.

### Tech Talk on 'Storage & Linux – Real World Application



The third semester BCA students attended a tech talk on 'Storage & Linux – Real World Application' on 4<sup>th</sup> September 2019, 8.30 AM to 9.30 AM. The session was addressed by Mr. Adwin Roy, Senior Engineer. Cloud Infrastructure services, Wipro Limited. Mr. Adwin spoke on the Network Attached Storage (NAS) and Storage Area Networks (NAS), it's functionalities, importance, and real life applications. He also shared the scope of Open Source programs and Operating Systems.

#### **Guest Talk on Emotional Intelligence**



A Virtual Power Seminar on the topic 'Emotional Intelligence' by Mr. Manikandan Balasubramaniam , Head-Human Resources, iTech India Private Limited ,Chennai was organized on 11<sup>th</sup> September 2021, Saturday from 11:00 AM to 12 PM for the second year and third year BCA and B.Sc. Students of the department.

Mr. Manikandan briefed on the Emotional Intelligence Domains and Competencies. He provided examples from his life experiences on emotional management. He also made the students reflect on the 5 W's and 1 H (Why, When, Where, What, Which and How), which they need to to ask themselves when it comes to solving a problem.

### Guest Lecture on Basics and Applications of X-ray Crystallography



A guest lecture on the "Basics and Applications of X-Ray Crystallography" was organized for the V Semester B.Sc. (PMCS/PME) students on 15<sup>th</sup> September 2021 from 11 AM to 1PM. The session was addressed by Prof. Nethaji, M., Chief Research Scientist, X-ray Crystallography, Inorganic and Physical Chemistry, Indian Institute of Science (IISc), Bangalore. Prof. Nethaji started with the very basics of optics, from geometrical optics to diffraction, which were usually taught in higher secondary classes to make the undergraduate students comfortable and to lay foundation for the upcoming rigorous physics. The speaker gave a historical perspective of the research carried out in the field of X-Ray crystallography and explained how quickly an accidental discovery in physics became an extensively used tool in various disciplines of science. Sir also briefed on the discovery of structures from NaCl to Insulin and penicillin. Professor also shared his experience on how guest's group in IISc effectively utilizes the x-ray diffraction technique for the structural analysis of various organic molecules. The session provided the students an opportunity to acquire knowledge and appreciate how well the theories learned in the classroom are effective in real world research.

# Guest Lecture on Gender Sensitization in College Campus



An Expert Lecture on "Gender Sensitization in College Campus" was organized by the Computer Science Department and Women Empowerment Cell of Kristu Jayanti College on 18<sup>th</sup> Septemnmber 2021, Saturday from 8.30 AM to 10 AM for the third semester BCA and B.Sc. Students of the department.The resource person for the session was Prof. Anitha Kurup, Head, Department of Education, School of Social Sciences, National Institute of Advanced Studies, Bengaluru.

The session was organized to provide an integrated and interdisciplinary approach to understand the social and cultural constructions of gender, that shapes the experiences of women and men in society.

Prof. Anita Kurup started the lecture by defining the correct meaning of sex and gender and elaborated on their differences. Professor explained that child bearing, which includes pregnancy, birth and the early nursing period, along with child rearing - that is, the upbringing and caretaking of children - was often differently perceived in our society, and by women themselves. She instilled on the students the thought and the idea of gender equality and the importance of men in rearing and in bearing, although indirectly.Madam also spoke on one of the major issues in our society, gender discrimination in the households. She explained why 2,40,000 girl children and women fell victim to it, every year, in India.

Prof. Anita Kurup also made a mention on the common stereotype of women doing chores, and men not meant to be doing so. She oriented the students that it is very important to understand that no job is of less dignity or is restricted to a particular group.

# Webinar on Basics of Python Programming and Data Visualization using Matplotlib



A webinar on the basics of Python Programming and Data Visualization using Matplotlib was conducted on 17<sup>th</sup> November 2021 for the fifth semester BCA students by Dr. R. Rathinasabapathy, Associate Professor, Department of Computer Applications, Madurai Kamaraj University, Madurai, Tamil Nadu.Dr. R. Rathinasabapathy briefed on the instalation of Python Libraries and highlighted the importance of Python Programming. Sir explained the types of charts and how plotting should be used matplotlib. Sir also elaborated on the concepts of various Data Visualization techniques and also how to write the Python program. Dr. Rathina sabapathy also showed example techniques of how Data Visualization is worked in Python coding.

# Guest Lecture on Cyber Security Essentials



Guest Lecture on Cyber Security Essentials was conducted ofr the First Year BCA and B.Sc. Students of the department on 23<sup>rd</sup> October 2021 by Mr. Joseph Sibychen, EC Council certified Cybersecurity Trainer. Mr.Joseph highlighted the importance of Cyber security to the world and insisted that the student should know more about it.

Mr. Joseph explained the types of hackers- black hat and white hat hackers and how hacking should be used only in good measures. He also briefed the students on various cybercrimes including phishing and vishing and provided mechanisms to be cautious of malware and ransomware. Sir also demonstrated example techniques of cybersecurity put in practice through coding.

# **Expert Lecture Series on Graph Theory**



The Department of Mathematics organized an expert lecture on "Graph Theory" on 29-09-2021 from 3pm to 4 pm for the Fifth Semester B.Sc. Students. The resource person Dr. Nisha Mary Thomas, Assistant Professor, Department of Sciences and Humanities, Christ (Deemed to be University) spoke on the concepts of graphs and its applications in various fields.

Dr. Nisha talked on the significance of Graph Theory as it is applied to other areas of Science and being widely used to solve various real-world problems. She briefed on how Graph Theory is used in organic chemistry, solid state physics and statistical mechanics, electrical engineering, optimization theory and operations research.

# Tech Talk on Data Science



A tech talk on Data Science was organized for Fifth semester BCA and B.Sc. Students of the department on 25-09-2021. Ms. Shwetha Gopinatha Rao, Senior Lead Data Science Engineer, Gramener spoke about the importance of data Science and how it needs the domain expertise from programming, mathematics, and statistics to create insights and make sense of data. Madam also highlighted the demand of Data science today and explained how digital data is transforming businesses and helping them make sharper and critical decisions.

Ms. Shwetha also spoke on how the Data scientists are one of the most sought-after roles in corporate America today, because organizations armed with the right talent can drive more value from its data. However, data scientist roles are evolving as a matter of technological innovation and market maturity. Ms. Shwetha concluded the session by briefing on how Data Science is a highly lucrative career option.

# Commemorative Days International E-waste Day



International E-Waste Day was celebrated on 14<sup>th</sup> October to provide worldwide awareness on E-Waste, boost political care, and preserve our environment. In commemoration of E-Waste day the Department of Computer Science (UG) and the Centre for Environment and Sustainability, Kristu Jayanti College (Autonomous) organised an Intra-collegiate Event "E-RASE YOUR E-WASTE" for the students and faculties of the college from 7<sup>th</sup> October to 13<sup>th</sup> October 2021.Various competitions like slogan writing, short film production and Reforming the e-waste into a usable product was conducted. The students and faculty members actively participated and presented their slogan, short film, and products developed from E-Waste.



An E-waste drive was also organized from October 07, 2021 to October 13, 2021, within the campus to collect the E-waste for recycling.

The Students, Faculties, and Administrative staff participated and deposited the E-waste in the bins which were placed in various blocks. The drive could collect various non-functional e-waste equipment such as mouse, keyboard, wires, circuit boards, DVDs, compact disks, audio equipment and amplifiers which could be recycled. The drive provided an insight to safeguarding the environment and living organisms from e-waste issues and also brought in innovative thoughts about e-waste management.

# National Science Day



To mark the occasion and to inculcate the passion for Science in young students of the country, the National Science Day celebration was organized by the department in collaboration with Karnataka State Council for Science and Technology (KSCST) in the virtual mode on 27th February, 2021. More than 800 students from various higher secondary schools and colleges participated in the event. Dr. Binoy K Saikia, Senior Scientist at the CSIR-North East Institute of Science and Technology, Jorhat, Assam was the chief guest for the Inaugural ceremony. While delivering the thematic lecture on 'Future of STI: Impact on Education, Skills and Work' he emphasized on the importance of translating science and technology into indigenous start-ups in order to make the country self-sufficient in terms of meeting the market requirements as well as to generate employment. The inaugural ceremony was followed by various competitions for higher secondary school and undergraduate students.

The competition served to enkindle scientific temperament, creativity and imagination. Students from institutions across the country participated in the competitions. Essay and Quiz competitions were organised for higher secondary school students while undergraduate students participated in the Science business idea competitions and lecture contest. The jury members who evaluated the competitions were stunned and elated by the creativity and imagination in the young students and expressed their hope in the millennial generation to spearhead the innovations in Science and Technology that would make the country self-reliant.

# **Collaborative Events**

# Inauguration of Centre of Excellence for Women Empowerment



The Centre of Excellence for Women Empowerment was inaugurated at Kristu Jayanti College on 7<sup>th</sup> October 2021 between 11.00 AM to 12.30 PM. The centre was a CSR initiative by Honeywell with an objective of training the women students on Microsoft Azure cloud. The inauguration was witnessed by the Chief guest Mr. Suresh Babu, Head-Corporate and Government Initiatives, ICT Academy, Rev. Dr. Augustine George, Principal, Dr. Calistus Jude, Dean, Faculty of Sciences, Prof.Sevuga Pandian, Head, Department of Computer Science (UG) and the members of ICT academy Mr. Vishnu Prasad, State Head, Karnataka, Mr.Vishnu Sanjay, Senior manager-Corporate and Government Initiatives, Surendra A, Relationship Manager-Corporate and Government initiatives and Mr.Karthik B,Relationship Manager. Dr. Calistus Jude, Dean, faculty of sciences in his welcome note highlighted the importance of higher education in India. Hundred girl students from BCA and B.Sc. [CSMS/ CSME/ PMCS] who registered for this programme also attended the event. Rev Fr. Augustine George delivered the presidential address, empathizing the gender equality and importance of women empowerment. Principal appreciated the contribution of ICT academy with Honeywell CSR initiative to empower women in the field of technology.

The Chief Guest, Mr Suresh Babu, explained with statistics, as to how the job roles were going to change in the near future and the importance of being skilled is of utmost importance in the present world. He also highlighted on how every student would be benefited out of Honeywell CSR program, and each student will be globally certified on successful completion of hundred hours training on Microsoft Azure by Honeywell.



The Lab for training program was inaugurated by Rev. Dr. Augustine George in the presence of all the dignitaries as the center of excellence for Women Empowerment by Honeywell. Prof. Sevuga Pandian, Head, Dept. Computer Science(UG) in his vote of thanks explicated how Honeywell program would help the women youth of today despite the disruptive technologies in the Digital Revolution 4.0.

# Sixth Regional Women in Data Science (WiDS) Event



The Sixth Regional Women in Data Science (WiDS) Event was organized by SAP University Alliances on 22<sup>nd</sup> October 2021, with an objective to leverage data science to accelerate innovations necessary to build a more sustainable world. 35 girl students from I and III semester BCA Analytics attended the event.

The session had the top female data scientists sharing their experience and knowledge on how to leverage data science to accelerate innovations necessary to build a more sustainable world. They also highlighted on the skill sets that are needed for the women in the field.The event was lead by Mr. Rahul Sachdev ,Director, SAP University Alliances India Subcontinent. Ms. Josie Guan provided an introduction to sixth regional Women in Data Science (WiDS) event. Ms.Karina Edmonds, Head of SAP Academies and University Alliances, rightly quoted that there are no limits for the opportunities because the road is endless and the options are amazing.The event also had a fireside chat with female industry thought leaders from Microsoft, Accenture and SAP, and a female youth social entrepreneur who discussed their sustainability journeys, inspiration behind their success and how they overcame the challenges to move forward.

# Hackerverse 2021

Hackerverse2021 was inaugurated virtually on 15<sup>th</sup> March 2021, Monday betweem 3.00 PM to 4.00 PM by the Guest of Honour, Mr. Mrithunjay Vishwakarma, IBM India Software Labs, Rev. Dr Augustine George, Principal, Rev. Fr Lijo P Thomas, Financial Administrator and Head , Dept. of Computer Science, Dr. Calistus Jude, Dean of sciences, Prof. Sevuga Pandian, Co-ordinator, Department of computer science, Dr. Ranjitha M and Prof Ramanathan G, Faculty Co-ordinators of Hackerverse.

Hackerverse aimed to provide a platform to all young minds to come together and solve some of the pressing problems faced in our daily lives and to inculcate a culture of product innovation. It also encourages the initiative of AatmaNirbharBharat by our honourable Prime Minister to make India self-reliant in every sector. Mr. Mrithunjay Vishwakarma, Community leader for developer ecosystem across India and South Asia, IBM India Software Labs addressed the gathering and expressed his happiness for IBM being selected as Technology Partner for second year consecutively for Hackerverse2021. He aslo shared his previous cheerful memories and experiences of Hackerverse 2020 and expressed his fascination on the creative and innovative skills of students of Kristu Jayanti College. He briefed the students on the importance of inculcating the culture of innovation.

The first technical session on "Design Thinking and Ideation" was addressed by Mr. Mrithunjay Vishwakarma on 15<sup>th</sup> March 2021, 4 to 5 PM. He spoke on the Design thinking process and how it encourages the organizations to focus on the people they're creating for, which leads to better products, services and internal processes.

The session also highlighted on how to prioritise the user's needs first which should also follow our company morals and motto. He also spoke on the out of the box thinking using some amazing real world examples.

The second technical session on "IBM Cloud services and use-cases" was addressed by Mr. Karan Chaturvedi, Developer Advocate, IBM on  $16^{th}$  March 2021,4 PM to 5.30 PM.

Mr. Karan briefed on the storage and services provided by the cloud to its customers and the importance of cloud in real world with a few real time implementation.

The students were also introduced to the cloud platform provided by IBM, assuring the usage of cloud is easier if we know the functionality of the services.

The third technical session on "IBM Watson and DevOps Services" was presented by Mr. Sudharshan Govindan, Developer Advocate, IBM on 22<sup>nd</sup> March 2021,4 to 5.30 PM. Mr.Sudharshan spoke on DevOps and its usage and how it benefited the developers. He focused mainly on agile method of software development and explained about different phases of software development life cycle. Sir also explained about IBM Watson AI engine which is capable of multiple cognitive task like Text To Speech translation or vice-versa, Question-Answer bot, Language Translator etc. and also provided a walkthrough to IBM Cloud interface.

Mr. Sudharshan also discussed about IBM Cognitive Class , a platform which offers multiple free and paid courses which allows the students to earn badges and certificate on completion of the course.



SODACON Global 2021, by SODA Foundation, is a technical conference that brings together industry leaders, developers, and end-users to collaborate and share projects, innovation, and best practices for data management and storage in the era of cloud native, IoT, big data, machine learning, and many more. 50 students of the department attended the conference on 13<sup>th</sup> and 14<sup>th</sup> of August, 2021 which enabled them to enhance their job and training opportunities also providing a channel to collaborate and work with Research and Development teams of various companies.

#### Alumni Talk



Ms.Nisarga BN (BCA 2018-2021) Customer Service Executive South Indian Bank

Looking at the mirror I found myself very different from the past. When I rewind few years back, the time I stepped my initial foots at Kristu Jayanti College, with no clear picture of my future or anything at that point, I could see many more faces in the same state. Well as the days passed, I understood that there is a thin line between knowledge and experience. Knowledge is what you learn and experience is what you seek. College moulds a student by providing various opportunities to develop their soft skills and to develop values that would contribute to building their good future. I transitioned from the state of being a student to a "teacher", Kristu Jayanti College established confidence and sense of self within myself in these years which brought in abilities to face challenges of life. I am a person who always wants to stand out of the crowd, and the right platform was given to me by the college Kannada theatre team "RANGANTHARANGA", which taught me to shoulder responsibilities of self and the team as a whole. College apart from imparting education mould the student character and personality too.

The real world looked a little scary after steeping out of college life. The responsibilities, difficulties, the path was not easy, through it all what matters most to me, had changed as well. I could stand strong and fight for success. And what I am today is because is what it was taught to us by our teachers and the life we experienced at the college.

Regardless of whether my time at the college has made more ambitious or carefree, it shaped me not only into who I am today but who I will be for all the years to come. What I was four years ago is not the same, unlike many things in life, you have the power to choose your reflection, your identity your future.

I am happy and proud to be a "JAYANTHIAN" ....!!!

"The quality of a college is measured more by the kind of student it turns out than the kind it takes in."

#### **Faculty Development Programme**



The Faculty Development Program on Open Source Demystified Level -1 jointly organized by the Department of Computer science (UG) and SODA Foundation from August 6 - 13, 2021 through the Zoom platform. The FDP was addressed by 4 resource persons from SODA foundation with seven booming topics in Open source technology. The faculties were introduced to open source software, which is freely available for the public to view, edit, and redistribute and can be used to work on projects. The session also introduced the development model and tools available. The resource persons also highlighted the differences between free software, open-source and closed- source. The session also provided insights to the funding and open-source licensing.

#### **Student Achievements**

776 online certifications were completed by the students from various MOOC Platofrms and Institutions

#### **Academic Collaborations and Linkages**

The teaching learning process is streamlined with the adoption latest trends in technologies in curriculum. This is made possible by entering into linkages and collaborations with various instituted of repute. The institution has active collaboration and linkages with the following organisations for various academic enrichment activities like providing certificate courses, training and skill enhancement programs, Infosys Springboard, Center of Excellence on Women Empowerment - CSR initiative of Honey well - ICT Academy, SAP, Celonis, Linux Foundation, Cisco Net academy, SODA, IBM P Tech, Societies for Data Science, Coursera, AWS - Amazon Web Services, Oracle Academy, Palo Alto Academy, Microsoft. UiPath Inc,Salesforce, Oracle Academy, CSI- Computer Society of India, NPTEL LOCAL CHAPTER, ACM-W Students Chapter, Microsoft Dynamic Alliance,AWS educate, ICT Academy, Vmware, DELL EMC, ISRO, CDAC

#### **Faculty Awards and Recognitions**

**Dr. Prakash V S** - Best Senior Faculty Award, Novel Research Academy **Mr. Prathap G** - Best Research Scholar Award from Novel Research Academy

**Prof. Sevuga Pandian** won the best paper award for the paper Real Time use cases of mobile edge computing and challenges in a Nutshell at the conference of Emerging trends in Science, Technology and Mathematics organised by Parvathys arts and science college wisdom city-Dindugal

**Ms. Ayswarya B** is selected as Outreach member for India in the Soda Foundation

#### **Patents Files or Granted**

**Ms. Ayshwarya B :** Smart Medication system for Real time monitoring of elderly and chronic patients [Patent Application Number-202141002260]

**Prof. Sevugapandian A, Ms. Dhanamalar M, Mr. G Ramanathan** -Smart Google [Patent Application Number - 337141001]

**Dr. Dalvin Vinoth Kumar, Dr. Cecil Donald, Dr. Anthony Vincent, Dr. Margaret Mary:** Device to Predict the Location of Falling Objects using Internet of Things [Patent Application Number - 202141007624]

**Dr B J Hubert Shanthan, Prof Soumya K, Dr Margaret Mary T** -Protocol Verification: Ad Hoc Routing Protocol Validation and Verification Process Based on Beagle Bone-X15 [ Patent Application Number - 20211100773]

**Dr. K. Kalaiselvi, Ms. Mary Jacob, Dr. Gopika S,** Methods and compositions for improving and obtaining useful plant traits using Internet of Things (IoT),24-09-2021

**Mr. Prathap G** - A Virtual Reality Based Personalized Virtual Room for Improving Quality of Life for the Bedridden Patients [ Patent Application Number - 202141031084]

**Ms. Ayshwarya B** - An artificial neural network based model for lung cancer detection, application number - 202141031118 filed on 23-07-21

#### **Online Certification**

32 online certifications from various MOOC and Institutions were completed by the faculty members

#### Highlights



Kristu Jayanti Journal of Computational Sciences is a bi-annual, Peer-Reviewed international journal that publishes, High quality original, Theoretical, Practical Advances and Comprehensive surveyarticles in all areas of Computing Science and Mathematics, with Interfaces to Electronics, Physics, Statistics and Engineering.

It intends to disseminate results and research with a strong empirical component and aims to bridge the major gap between research and practice by promoting industry-relevant research. The first issue of the journal was published on 3<sup>rd</sup> November 2020.

#### **Faculty Publications**

Swift Heavy Ion (Au3+) Irradiated 2-Amino-5-Nitropyridinium Chloride (2A5NPCL) Nonlinear Optical (NLO)Single Crystal [Mr.G.Prathap, Dr.M. Ambrose Rajkumar], International Journal of Research And Analytical Review (IJRAR), Jan 2021 EISSN-2348-1269

Study on Influences of Learning Apps in Children's Development Pertaining to Physical, Psycho-Social and Economic Variants ,[Dr.K.Kalaiselvi, Dr.Gopika, Ms.Mini Gopalakrishnan, Ms.Mary Jacob ] PSYCHOLOGY AND EDUCATION (2021) 58(3): 895-901 ISSN: 0033-3077

Ensuring Data Storage Security in Cloud Computing With Third Party Auditing [Ms.Deva Kumari A, Ms.Divya K.S, Dr.V.S.Prakash], Journal of Xi'an Shiyou University,Natural Science Edition, March 2021, ISSN:1673-064X

Study on Challenges Faced by Working Mothers in Bangalore [Dr. Anoop Baby K B, Dr. M. Ambrose Rajkumar], International Journal of Research and Analytical Reviews (IJRAR). March, 2021, E-ISSN 2348-1269, P- ISSN 2349-5138, IJRAR March 2021, Volume 8, Issue 1.

Enhanced Privacy With Disrupted Data By Choosing Features [Dr.V.S.Prakash], Turkish Journal of Computer and Mathematics Education, April 2021, Vol.12 No. 7 (2021), 1659-1668

L2b: Lexicon Boosted Bayesian Classification For Popularity Prediction Of Movies With Improved Accuracy Using Twitter Corpus [Dr.V.S.Prakash], Turkish Journal of Computer and Mathematics Education, April 2021, Vol.12 No. 7 (2021), 1659-1668 V2V Communication and Authentication: The Internet of Things Vehicles(Iotv) [Ms.Mary Jacob], Wireless Personal Communications, April 2021, ISSN / eISSN:0929-6212 / 1572-834X,DOI-10.1007/s11277-021-08449-5,

Radiated magnetic flow in a suspension of ferrous nanoparticles over a cone with brownian motion and thermophoresis [Dr.Mamatha S Upadhya], Case Studies in Thermal Engineering, 25 (2021) 100915

Enhanced high availability distributed object oriented platform operations administration for big data [Dr.C.Naveeth Babu], Journal of the Maharaja Sayajirao university of Baroda, April 2021, ISSN: 0025-0422

Context Mining for Deep Learning Over Community Health Data for Disease Inference [Ms.Dhanamalar], Proceedings of First International Conference on Mathematical Modeling and Computational Science. Advances in Intelligent Systems and Computing, vol 1292. Springer, Singapore, 05 May 2021

Automated Disease Inference For Community Health Care Using Graph Induced Neural Network, [Ms.Dhanamalar], Turkish Journal of computer and mathematics, Vol 12 No.10(2021),

A Statistical Analysis of Impact of Risk Factors Causing Lung Cancer among Non-Smokers [Ms.Ayshwarya B], Turkish Journal of computer and mathematics, Vol 12 No.10(2021)

Study on Effect of Internet community in Socialization among Teenager [Dr.Ranjitha M, Ms.Ayshwarya.B, Ms.Dhanamalar M, Dr. Hubert Shanthan B ], Turkish Journal of computer and mathematics, Vol 12 No.11(2021)

Enhanced Medical monitoring wireless sensor networks using proposed greedy multipoint relay protocol Algorithm [Dr.C.Naveeth Babu, Dr.V.S.Prakash], Applications of artificial Intelligence in engineering : Proceedings of First Global Conference on Artificial Intelligence and Applications (GCAIA 2020) - Springer, May 2021, 978-981-334-604-8

Enhanced Approach for soil classification using boosted 5.0 decision tree Algorithm [Dr.C.Naveeth Babu], BSSS Journal of Computer, June, 2021, ISSN: 0975-7228

Optimized symmetric keys generated using genetic algorithm for fully homomorphic encryption system [Dr.K.Kalaiselvi, Dr.Gopika.s, Mis.M.a.y Jacob], Bioscience Biotechnology research communication, June 2021, ISSN:0974-6455

Understanding to Future of Artificial Psychology System: A Survey [Dr.Margaret Mary T Ms.Soumya, Mr.Ramanathan ], Bioscience Biotechnology research communication, June 2021, ISSN:0974-6455

TCAMTSA: Time and Cost based Scheduling Algorithm for Multi Cloud Systems [Dr. Hubert Shanthan BJ, Dr. Dalvin Vinoth Kumar A, Dr. Stephen R], IEEE, June 2021 978-1-6654-4634-1

IoT based smart energy forecasting and data logging systems [ Ms. B. Ayshwarya], IEEE ISBN:978-1-6654-4775-1

Intelligent and Safe Medication Box in Health IoT Platform for Medication Monitoring System with TimelyRemainders, [Ms. B. Ayshwarya],2021 7th International Conference on Advanced Computing and Communication Systems (ICACCS), 2021, ICACCS51430.2021.9442017.

Study on Psychological Well-being of Working Women [Mr.Prathap G], Annals of the Romanian Society for Cell Biology, June 2021, ISSN:1583-6258

Trends and growth rate analysis of gram production, [Dr Vinoth B, Ms.Liji George],Kristu Jayanti Journal of Computational Sciences

Fog Computing - A Survey on Scheduling, Optimization Techniques and Applications [Dr. Ranjitha M], IEEE, June 2021;DOI: 10.1109/ICACCS51430.2021.9441769

#### **Books and Chapters**

Architecture of IoT and Challenges [Dr. Margaret Mary, Prof. Ramanathan G], Cases on Edge Computing and Analytics, IGI Global Publishers, USA, ISBN 9781799848745, January 2021

Internet of Things (IoT): The Standard Protocol Suite for Communication Networks [Dr. Stephen R., Prof. Ayshwarya B., Dr. Hubert Shanthan B.J.], Cases on Edge Computing and Analytics, IGI Global Publishers, USA, ISBN 9781799848745, January 2021

Overview of Edge Computing and its Exploring Characteristics [Dr. Margaret Mary T], Cases on Edge Computing and Analytics, IGI Global Publishers, USA, ISBN 9781799848745, January 2021

Innovative Concepts and Techniques of Data Analytics in Edge Computing Paradigms [Prof. Soumya K., Dr. Margaret Mary T], Cases on Edge Computing and Analytics, IGI Global Publishers, USA, ISBN 9781799848745, January 2021

Edge Computing and IoT Technologies for Medical Applications: A Case Study on Healthcare Monitoring [Ms. Ayshwarya B.], Cases on Edge Computing and Analytics, IGI Global Publishers, USA, ISBN 9781799848745, January 2021



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# **Department of Computer Science**

# Interface

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