Kristu Jayanti College

AUTONOMOUS — Bengaluru

Reaccredited 'A' Grade by NAAC | Affiliated to Bangalore University

For Private Circulation only

Dept. of Computer Science

Interface

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Inside Pages

★ MESSAGE
★ HIGHLIGHTS
★ EDUCATORS WRITE-UP
★ STUDENTS SPEAK
★ DEPARTMENTAL ACTIVITIES
★ ACHIEVEMENTS

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BEST COLLEGE SURVEY 2017

India Today - Nielsen Survey 2017

Kristu Jayanti College is rated as

- 2nd Best **BCA** College in India
- 9th Best **COMMERCE** College in India
- 14th Best **ARTS** College in India
- 17th Best **SCIENCE** College in India

Kristu Jayanti College is rated in Bengaluru City as

- 2nd Best **ARTS** College
- 3rd Best **COMMERCE** College
- 4th Best **SCIENCE** College

NATIONAL LEVEL

2nd RANK	9th RANK	14th RANK	17th RANK
BCA	**COMMERCE**	**ARTS**	**SCIENCE**

BENGALURU CITY

2nd RANK	3rd RANK	4th RANK
ARTS	**COMMERCE**	**SCIENCE**

Visit our website for more details

www.kristujayanti.edu.in

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From the Principal

The exponentially evolving digital technologies have accelerated the entire globe into a superfast trajectory of transformation.Information Technology has taken the forefront surpassing agricultural transformation and industrial revolution.It is this splendid power of computing that is stimulating the application of Information Technology in every segment of human activity. Today we have the astounding technology that has the power to retrieve any information and communicate it in a thousand different ways using a device that fits in the pocket.There's always something new on the technology horizon and we need to wait with curiosity for the concealed technological marvels.

The department of Computer Science through their various innovative programs has always enabled the students to enhance their potential based on their unique skills and disposition.The newsletter "Interface" is a creativecanvas portraying all the activities and progression of the department in the academic year. This technical canvas also provides a platform to the faculty and students to showcase their intellectual knowledge coupled with their scripting skills. I congratulate the Department of Computer Science in bringing out the fifth volume of the newsletter "Interface" and wish them all success in this creative effort.

From the Vice-Principal

Computational Science is a rapidly growing multidisciplinary field that uses advanced computing capabilities to understand and solve complex problems. Teaching learning process has evolved far from the traditional way to the application of computer simulation and other forms of computation to solve problems in various scientific disciplines and to convey the knowledge to the aspiring students.

The Department of Computer science has always delivered technology, science and culture with a constructive variance and this variance is making the department stand second in the Nation for the programme it offers. The department is committed to excellence in technology focused education with a renewed emphasis on the entrepreneurial and ethical practice of Computer Science and Information Technology.

The positive ambience in Kristu Jayanti, molds individuals to learn and to make positive changes in the society. Computer Science department focuses on preparing students to face contemporary challenges and make the world a better place with smart, sustainable solutions that are created and implemented with knowledge, ethics, passion and compassion .

I congratulate the department for the excellent effort they have contributed in collecting the activities of the department and bringing out this newsletter.

From the HOD

The revolution of education to adapt in a globalizing marketplace with progressing technology is a vital concern for educators and policymakers in order to help students learn, fully develop and prepare them for life after graduation. It has become crucial to provide multiple paths to success so that every student adapt to the changing demand of skills and the digital revolution.

The department of Computer Science makes certain that every student not only graduates with a basic degree but more importantly add on the knowledge, competencies and skills to compete for the jobs of today and the future through various vibrant activities of the department. The department with its several activities and special interest groups facilitates the students to adapt, accelerate, accomplish and drive the change in their interested domain of present technology.

The persistent pursuit for knowledge and relentless effort of enthusiastic faculty and students has aided in traversing productively empowering the students with complete understanding of their subject with the necessary skills to meet the global job market. I compliment the department of Computer Science for the remarkable efforts made in the equitable transformation initiatives to collectively accelerate success and bringing laurels to the college making the visionary zeal into reality.

Kristu Jayanti College is rated as 2nd best BCA College in India

About the Department

Prof. Sevuga Pandian A
Co-ordinator, Computer Science (UG)

The Department of Computer Science (UG) with its proud history spanning over one and a half decades stands second in the Nation for the BCA programme it offers. Both BCA and BSc (CSMS/CSME) 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 800 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.

Guest lectures, workshops, seminars and technical video sessions are organized to enhance the educational experience by providing students with the current industry experiences, insights and perspectives on their domain. Industrial visits are arranged to expose the students to a different landscape, variety of people thereby encouraging interaction, exchange of ideas and to acquire the knowledge about the basic functionality of an organization. Value added Courses and certification courses enable our students to acquire something more than what is provided in the curriculum. Social outreach programmes provides the students an opportunity to recognize their social responsibility to give back and contribute to the development of the society. Technical communities provide a platform for the students to discuss, share and update their knowledge in various domains of information technology.

An intra-collegiate fest Synchronize is organized for the first and second year students of computer science by the third year students where they get an opportunity to organize, participate and showcase their potentials. Xactitude is National level inter collegiate computer science fest envisaged by the academy where students from other colleges can showcase their intelligence and creativity in myriad facets of information technology. The innovative club of our department initiated Galaxia two day science exhibition in which students from our college and other colleges develop computer science, electronics, statistics and mathematics projects which provide them an opportunity to experiment and innovate along with the curriculum learning.

The Department has initiated Academic Alliance with Oracle Academy, Microsoft Dynamics Academic, ICT Academy, ACM, NPTEL, AWS Educate, Dell EMC 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.

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 programme is one of 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.

Kristu Jayanti College is rated as

2nd best BCA College in India

BCA

NOVEL ACADEMIC ALLIANCES

Academic Alliance with ICT Academy

Kristu Jayanti College (Autonomous), Bengaluru is the first Arts & Science College in the State of Karnataka to sign the membership with ICT Academy. The membership is signed on June 23, 2017 to focus on making the Arts and Science students Industry ready. The membership is signed to benefit Faculty Members and Students through various initiatives of ICT Academy which includes Faculty Development, Student Skill Development, Industry-Institute Collaboration, Research etc.The Certificate of Membership was exchanged between Fr. Jose Kutty P.D ,Principal, Kristu Jayanti College and Mr. Suresh Babu, Regional Head - Karnataka & Telangana, ICT Academy. Speaking on the occasion, Mr. Suresh Babu said, "ICT Academy, the non-profit organization is happy to sign its first arts & science college membership in the state of Karnataka". He assured to provide full support to the faculty and students of the college by providing world class training and delivering courses directly from the global corporate house to bring down the skill gap by being a bridge between academia and corporate. Mr. Vishnu Prasad, State Head - Karnataka, ICT Academy was also present on the occasion.The chief guest Mr. Tandava V Popuri, Director, DELL EMC, Bengaluru talked on the revolution instigated by big data, artificial intelligence and machine language. He also spoke on the huge industry demand for data scientists.

ORACLE Academy

Oracle Academy is the flagship program under Oracle's corporate social responsibility education pillar. Its mission is to advance computer science education and make it accessible to students globally to drive knowledge, innovation, skills development and diversity in technology fields. It is aimed at helping students develop computational thinking and logical data analysis. It supports them to create concise problem statements, identify and implement algorithm based solutions, generalize and extrapolate solution skills in every subject in the classroom and beyond. Oracle Academy offers its members both the educators and students of computer science the education resources to advance knowledge, skill development, innovation and diversity in technology fields.

AWS Educate

AWS Educate provides an academic gateway for the next generation of IT and cloud professionals. AWS Educate is Amazon's global initiative to provide students and educators with the resources needed to accelerate cloud-related learning endeavors. AWS Educate helps students learn about cloud computing by using AWS technology in their courses. The program includes free AWS credits, training, and content for institutions, instructors and students. Students receive credits for hands-on experience with AWS technology, training, content, career pathways and the AWS Educate job board.

DELL EMC External Research & Academic Alliance

DELL EMC collaborates with Kristu Jayanti College to prepare students for successful careers in a transforming IT industry through DELL EMC External Research & Academic Alliance program. This program offers unique 'open' curriculum-based education on technology topic such as cloud computing, big data analytics, information storage management and backup recovery systems and architecture.The courses focus on technology concepts and principles applicable to any vendor environment, enabling students to develop highly marketable knowledge and skills required in today's evolving IT industry. This program also makes the students more employable and industry ready professionals. Sharing the same vision as DELL EMC, ICT Academy has partnered with DELL EMC External Research & Academic Alliance to prepare the students as next generation of IT professionals in Cloud, Virtualization, Big Data Analytics and Security.

ACM–W Student Chapter

The Department has an ACM -W Student chapter which aims at increasing the knowledge and interest in the contributions of women in the science, design, development, construction, languages, management, and applications of modern computing. It provides seminars, lectures, learning forums and networking opportunities with peers and experts across the computing spectrum. It also aims at increasing recruitment and retention of women in computing throughout the pipeline including activities for girls in K-12, undergraduate and graduate students and professionals.

NPTEL Local chapter

Kristu Jayanti College (Autonomous) established a Local Chapter for NPTEL , (National Programme on Technology Enhanced Learning) a project funded by the MHRD, Govt of India on July 26, 2017. NPTEL is a Project initiative of IIT Madras, supported by the Ministry of Human Resources Development, Government of India, offering an opportunity to undergo free online certification courses in Computer Science, Humanities, Basic Science streams and Management. This facility assists faculty to enrich their knowledge and act as 'mentors' of the students.

Microsoft Dynamic Academic Alliance - DynAA

Kristu Jayanti College (Autonomous) along with Microsoft Company academic alliance signed a MOU for CRM [Online] on 31st August 2017, for the development of the standards of the students and the updates of the latest technology for faculty members and the students. By connecting three pinnacles of success - industry, education, and application - the faculty and administration at Kristu Jayanti College are preparing their students by teaching them the essential skills and strategies of Customer Relationship Management (CRM). As a Microsoft Dynamics Academic Alliance (DynAA) member, Kristu Jayanti College receives free solution licenses from Microsoft to teach Microsoft Dynamics CRM in their curriculum. The college is empowering their students to adapt to the changing world by preparing them for the workplace through technology.
By utilizing Microsoft Dynamics CRM, the collection agency strives to keep their information as accurate as possible, while providing a comfortable experience for all parties involved. Microsoft Dynamics CRM during each step of the student's career, but each position offered a unique perspective, showing the wide variety of opportunities available with Microsoft Dynamics-related careers. With the goal of making the students more competitive in the job market, Kristu Jayanti College industry-driven teaching technique is evident in the courses they are offer. Initially, the leadership in the college has designed a course for the students focusing on Microsoft Dynamics content where, upon successful completion, the students could apply for a Microsoft Dynamics Student Certificate. The Microsoft Dynamics Student Certificate documents a student's experience with Microsoft Dynamics, giving them a competitive advantage in the job market.
Students from B.com and BBA of academic backgrounds are able to complete this program, in which every participant will build a Microsoft Dynamics CRM skill set. Kristu Jayanti College recognizes the need for all students who interact with customers to develop skills in CRM. This led them to integrate Microsoft Dynamics CRM software into a wide range of academic areas within their university, including their Marketing, Sales, Management in Information System and other programs in Bachelor of Commerce and Bachelor of Business Administrator students.

Vmware IT Academy Program

Vmware provides the Kristu Jayanti College with the teaching and learning materials developed by VMware, creating a collaborative environment where students can obtain VMware certification and organizations can find skilled workers for the many in-demand and high paying IT jobs available today through VMware IT Academy program. This program provides students to access high quality educational content, certification potential, and experience with VMware technologies. VMware has organized "VMware - Open Badge Day", where by Faculty and students can take up assessments on various technology fundamentals like Data Center Virtualization Fundamentals, VMware Network Virtualization Fundamentals and VMware Cloud Fundamentals and earn the newly announced "VMware Digital Badges". It is an opportunity for students to easily and quickly share verified proof of their achievements.

NATIONAL CONFERENCE ON COMPUTATIONAL INTELLIGENCE (NCCI-17)

National Conference on "Computational Intelligence (NCCI-2017)"was held on 15th Sep 2017 in association with ICT Academy Bangalore. The main objective of this conference was to discuss the state-of-the-art developments, challenges and unsolved open problems in the field of Computational Intelligence. The conference promotes all aspects of computational intelligence theory, algorithm design, applications, and related emerging techniques. The National Conference on Computational Intelligence (NCCI-2017) brought together leading researchers, engineers and scientists in the domain of interest across the country by providing a platform to present new advances and research outcomes in the field of Computational Intelligence .

The Conference Convener was Dr. S.Nagarajan. Prof. Balaguruswamy, Former member UPSC and Former Vice chancellor, Anna University was the Chief Guest of the function. Prof. Balaguruswamy released the conference abstract proceedings and souvenir and delivered the inaugural address. In his inaugural address he insisted on the importance of research in Artificial Intelligence & Computational Intelligence and relationship between the research and society.

There were two technical Sessions. The resource person for the first technical session was Dr.Seetharam Ramachandralu, Master Data Scientist, Analytics Data Labs, DXC Technology. He provided insights into making decisions from unstructured data. He also demonstrated on converting speech to text data.

The second technical session was by Dr.Umamaheswari E, Associate professor, Vellore Institute of Technology, Chennai. Madam provided valuable information on IoT. The IoT refers to the connection of devices to the internet. The speaker explained some research problems related to healthcare. Paper presentations were chaired by Dr.Hanumanthappa.M, Professor and IT Head, Department of Computer Science and Applications, Bangalore University, Bangalore and Dr. M. Krishnamurthy, Professor & Head, Department of Computer Science & Engineering, KCG College of Technology, Chennai. The paper presentations extended across two sessions and provided extensive information and insights into Computational Intelligence. The papers reflected current trends in neural networks, image processing, data mining and human computer interaction, to name a few. The Conference saw the participation from around 26 colleges with nearly 140 participants from in and around Bangalore and from two outside state.

Dr. M. Krishnamurthy,Professor & Head, Department of Computer Science & Engineering, KCG College of Technology, Chennai, delivered the valedictory Address. He highlighted the importance of two R's (Result and Research) in Educational Institutions. participation from around 26 colleges with nearly 140 participants from in and around Bangalore and from two outside state.

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ISSUES IN WIRELESS SENSOR NETWORKS

Dr. G. Jasmine Beulah

Wireless Sensor Networks (WSNs) are a large number of small sensing, self-powered nodes that gather information or detect special events and communicate, in a wireless fashion, with the end goal of handing over the data to the Base Station (BS). The three key elements of sensing, processing and communication are combined into one tiny sensor device, which has applications in diverse fields like environment monitoring, human behavior monitoring, military surveillance, disaster relief operations, child education, microsurgery and agriculture. The convergence of computing and communication has enabled this emerging technology, to provide endless opportunities. Complete coverage and connectivity is particularly important for surveillance applications. Considering the entire area to be covered and the energy constrained sensors, with their batteries not usually replaceable and rechargeable, it is obvious that specialized energy aware routing protocols, offering high scalability, should be applied in order to preserve network lifetime, acceptably high in such environments.

Sensor networks should also be robust to change with their topology, especially in the case of failure of individual nodes. In particular, connectivity and coverage should always be guaranteed. Connectivity is achieved if the base station can be reached from any node. Coverage can be seen as a measure of quality of service in a sensor network. Connectivity and coverage define how well a particular area can be observed by a network and characterize the probability of detection of geographically constrained phenomena or events. Complete coverage is particularly important for surveillance applications. The functioning of the network as a whole should not be endangered by unavoidable failures of single nodes, which may occur for a number of reasons, from battery depletion to unpredictable external events, and may either be independent or spatially correlated. An interesting technique is clustering where nodes are grouped into clusters and transmit their information to their cluster heads, which fuse the data and forward it to a sink. Fewer packets are transmitted and a uniform energy consumption pattern may be achieved by periodic re-clustering. Data redundancy is minimized, as the aggregation process fuses strongly correlated measurements. A typical WSN has little or no infrastructure. It consists of a number of sensor nodes, working together, to monitor a region and obtain data about the environment. WSNs can be classified into structured and unstructured WSNs.

1. In a structured WSN, the sensor nodes are deployed in a deterministic manner. The advantage of a structured network is that fewer nodes could be deployed, with lower network maintenance and management cost. Fewer nodes can be deployed now since nodes are placed at specific locations to provide coverage

2. Unstructured WSN contains a dense collection of sensor nodes. Sensor nodes may be deployed randomly into the field. The network is left unattended to perform monitoring and reporting functions. Network maintenance such as managing connectivity and detecting failures is difficult in an unstructured network since there are a number of nodes.

Possible applications of sensor networks are of interest to the most diverse fields such as military target tracking and surveillance, natural disaster relief biomedical health monitoring and hazardous environment explorationand seismic sensing.

- In military target tracking and surveillance, a WSN can assist in intrusion detection and identification. Specific examples include spatially correlated and coordinated troop and tank movements.

- With natural disasters, sensor nodes can sense and detect the environment to forecast disasters before they occur.

- In biomedical applications, surgical implants of sensors can help monitor a patient's health.

- For seismic sensing, random deployment of sensors, along the volcanic area, can detect the development of earthquakes and eruptions.
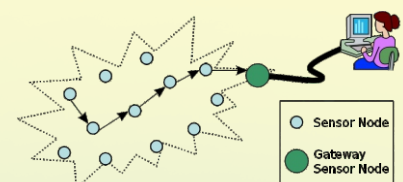
MINDS AND MACHINES

Prof. Cecil Donald A

Artificial Intelligence is the attempt to artificially create cognitive beings. In computer science AI research is defined as the study of "intelligent agent": any device that perceives its environment and takes actions that maximize its chance of success at some goal. AI researchers like to point out that the cognitive powers of these beings need not be the same as humans, but as traditional Artificial Intelligence techniques have fallen far short of the overly optimistic predictions of 'having thinking machines within a few decades' and have not produced a robot that is even remotely like the robots of the science fiction movies. Many AI researchers have turned to the cognitive psychologists for inspiration: a clear justification of the need of cognitive science, bringing together cognitive psychology and artificial intelligence. Moreover, Artificial Intelligence has an obvious engineering flavor and also has a highly theoretical component. Finally, artificial intelligence raises deep philosophical questions: do thinking machines have personal rights ? Do we really want to create artificial intelligence? Is it even possible? What, indeed, are the basic foundations of cognition in general? Machine Reasoning, Cognitive Robotics, Synthetic Characters and Philosophy of AI are the 4 subfields of Artificial Intelligence that are well supported by Minds & Machines. Machine Reasoning is the attempt to have a computer do, or be an aid with, reasoning. Historically, the main focus of machine reasoning has been Automated Theorem Proving, where one attempts of formalize algorithms to check whether something deductively follows from something else. However, organisms trying to reason about an uncertain and dynamic environment would probably use reasoning to generate hypotheses, or make non-deductive, yet quite reasonable, extrapolations from what they know.

Cognitive Robotics is an attempt to create robots with a wide range of cognitive powers, as needed for the kinds of open-ended tasks and problems that any organism in a sufficiently complex world will face. Cognitive robotics is in this respect to be distinguished from more traditional industrial robotics where the task to be performed is narrow and well-defined and the environment well-contained.

Synthetic characters are the agents that live in virtual or cybernetic environments such as video games or the internet. Given their narrower environment, a synthetic characters' psychology can be a lot simpler than a cognitive being having to navigate our actual physical world. Clearly, the gaming industry is interested in having game characters whose cognitive model is a little more intricate than the sliding personality scales of the simulators, but other applications would be intelligent tutoring systems or more realistic virtual environments used for simulation and training purposes.

The field of Artificial Intelligence is ubiquitous with deep philosophical questions. For example, Can the mind be captured computationally? What is consciousness? What constitutes a 'personal being'? Philosophers of AI also discuss the probability of different models of cognition, such as logicism, connectionism, and particular problems that have come up during the lifetime of AI, such as the Chinese Room argument and the Turing Test, the grounding problem and the frame problem.

Virtual personal Assistants, Video Games, Smart Cars, Predictive Analysis, News Generation, Fraud Detection, Music & Movie Recommendation Services, Security Surveillance, and Smart Home Devices are some of the examples where AI is used. AI is everywhere, and it's making a huge difference in our lives every day. As Artificial Intelligence is a huge field, it is really hard to refer one single programming language and there's no authoritative answer as to which programming language can be used for developing AI projects. The skill set necessary for AI jobs/projects include python, Java, C++, Lisp and Prolog. It's atleast a decade away, but it may take that long to make it safe...

COMPUTER-MEDIATED REALITY

Prof. Suresh K

Augmented Reality (AR) in education will soon revolt learning. AR will fully change the location and timing of study process and open additional ways and methods. Augmented reality is a technology that layers computer-generated enhancements on top of an existing reality in order to make it more meaningful through the ability to interact with it. Finally, AR capabilities may make classes more transformational and engaging. Recent statistics show that the Augmented Reality market will grow to a value of over $90 billion by 2020.

Educators know for sure that learning can't include just learning and reading parts. It should have creative and interactive elements as well. Everything educators need is to get student's interest in the subject and AR helps it a lot. Nowadays, 71% of people from 16 to 24 years have smartphones. Most of them are active smartphone users to enter social platforms, play games and to be in connection with friends and relatives. Recent studies have shown that 1/3 of students use their electronic devices more than 10 times during a school day. But meantime, less part of them use their smartphones in the learning process to find some help for homework, receive extra information about subject, etc.

Perspective of engaging smartphones and usage of AR for education process is amazing, but meantime only few educators really move this way. AR may help in various ways to give students and listeners extra digital information about any subject, making complex information easier. Ability to connect reality and digital content has slowly become true and opens more options for educators and students.

Educators are trying to start using augmented reality in classroom lessons, commonly, to support their class with AR features. It may entrap attention of students as well as motivate them to study. Adding extra information like short biography of a person, some facts about various kinds of stuff, Geo-location of historical event or visual model of math concept would give student, a wider understanding about the topic. Students from University of Warsaw used AR technique to recreate historical places of Warsaw, Poland. Students saw the streets of Poland via their mobile devices.

By doing homework, receiving a deeper understanding of home task, students may scan pages of homework to receive text, audio or video tips from their teachers that may assist them in solving problems. By scanning photos of teachers and students on board students may get extra information related to them. It may help make tighter connections in the group.

AR technology has an ability to render in 3D model anything that may be hardly visualized in a classroom, at a computer, in minds of students. Inverse abstract and difficult content in visual models help students get deeper understanding about lesson topic. This works especially well with visual learners and also helps others get alternative ways of integrating theoretical material into real concept.

VUFORIA is the leading AR platform which delivers best-in class computer vision. Generally AR supports leading smartphone, tablets and digital eyewear across Android and IOS. The AR projects can be developed for Android using Java/ C/ C++ and for IOS using Swift/ Objective C / C++.

Incorporating the AI into education will inculcate involvement and integration, discover and learn, Object Modeling, Interactive books and skill training. With the wide-spread use of AR, our students should be provided with the opportunity to become familiar with the technology and use it in the classroom. It is not a secret to any educator that more motivated and engaged learners always understand subject better and learn faster. Their attention and energy concentrate on studying process as educator keeps them engaged and interested. So, Augmented Reality in education process provides huge benefits to all learners.Introducing augmented reality to the students, will enable them to discover unknown passions and inspire their future endeavors.Let student imagination runs wild!
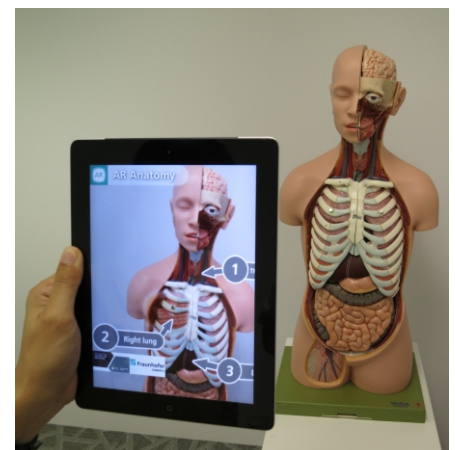
ALUMNI EXPRESS

Ms. Sivaranjani R

The kind of college life that KJC gave me is always memorable. Be it the classroom learning, laboratory practical, sports fest, cultural events. Thoughts on each and every aspect of being a student at KJC are evergreen in the minds of every Jayantian. It was the first day of my college life when I came with so much of learning expectations. At the end of three years of my life at Kristu Jayanti College all those expectations were added as my learning experience. KJC is a brand which elevated my status in various real life circumstances. The faculties were so qualified and friendly who facilitated our learning and disclosed us the path to follow. They not only disciplined or guided us but they revealed us the various possibilities from which we could choose from. And this methodology is the best which every Jayantian would have felt is the best as I do. Right now I work in Dell EMC and whenever people around me applaud for my trait, I always remember of Kristu Jayanti College for a moment which played a key role in developing my personality to who I am today. I always remain a proud Jayantian. facilitated our learning and disclosed us the path to follow.

STUDENTS SPEAK

Computer Local Area Network Security and Management

Mr. Aashish Dulal (VI BCA A)

Developments in computer network technology have greatly improved the sharing rate and utilization of information resources. Many areas widely using local area network are gradually exposed to high degree of security and confidentially issues. In particular, people lack knowledge on security policy and network security control mechanisms making the network security more complex. Currently, people's social life is closely related to computer networks through the usage of Facebook, Twitter, Instagram etc., which makes us vulnerable especially due to propagation of new media and sharp rise in the number of Internet users worldwide making people more dependent on the network. A LAN security threat has been a subject of computer science research areas.

In the 21st century due to the large computer network coverage and increased transmission speed many businesses and family units makes an effort to improve the efficiency and quality of life by taking the advantage LAN. At the same time, a variety of network security threats are also developed and updated. The network hackers, viruses, malware intrusion, unauthorized access to key sectors and sensitive information and loss of backup data and storage media etc. becomes the main source of LAN network security threats. When LAN security measures are not good, it would be attacked by hackers through the system's IP address or user passwords affecting the normal operation of the network.

Computer viruses are computer instructions or program code which can destroy computer functions compiled or insert data in a computer program affecting the computer by its self-replicating nature. It can be spread through a variety of ways to the Internet, disk, Email, etc. Once your computer is infected with virus, it will shock and damage the computer's memory consuming system resources. The specific manifestations add drive protection wherein users cannot delete some software, hijack IE browser home page and so on. Some tampering with the default project is done to modify the system to start the project such that some malicious software system set on user's computer allows to open the back door after which the door for poisoning by hackers to remotely control the computer composed of foreign botnet attacks, launching spam, click on the online advertising and other profit-making etc. are activated.

App Development

**Maria Israel Sathyan
(IV BCA C)**

If you're a beginner interested to design or build an app the best tool to do it is Appy Pie or Thunkable. These are the websites which provide free components to design and build the apps. Selling your apps can be through amazon underground which is a free site to upload the apps. Some of the apps developed by me on Appy Pie are:

BOOKSPORT :
Books port is an app built on appy pie platform runs on Android based phones and tablets which inherits the form of digital library where user can get e-books.

ISAPP
ISAPP is a social interaction app where user is allowed to post their wells clicked photos and videos and also share their views and idea among the users. It also consists of chat rooms and a private box where posts can be made visible only for some users.

ONE CLICK PIC
One Click Pic runs on Android based devices which is an app developed to promote photographers and videographers for their artistic work. These apps are not yet officially released on app stores. I have worked on the two best sites to develop and publish apps but there thousand more and you can try them.
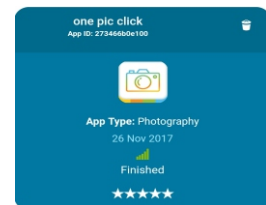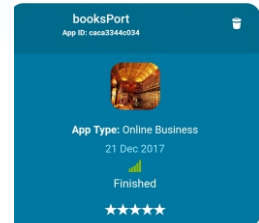
ACM-W ACTIVITIES

HOUR OF CODE

ACM-W Student Chapter joined the global movement of Computer Science Education Week by hosting an Hour of Code on December 9th 2017 at the campus. The Hour of Code started as a one-hour introduction to computer science, designed to demystify "code" to show that anybody can learn the basics and to broaden participation in the field of computer science. The session was initiated by Mr.Shriharsha, Web Developer at Accenture Solutions Pvt Ltd. He interacted with the students and provided a session on "Introduction to Python". This was followed by the Hour of Code Activity in which the students developed a project on "Flappy Bike". Students were very enthusiastic and actively participated in the session. At the end of the activity, students were awarded with an Hour of code certificate to encourage their learning.

"INSTAURATION-Let's Look Around"

ACM-W Student Chapter organized an exhibition "INSTAURATION-Let's look around" on 5th December 2017. An exclusive exhibition of the dolls created by Sr.Francoise Bosteels popularly known as 'Gombe Sister' was held in the Campus between 10:30 am to 3:30 pm to portray the images of people's life through the needle's eye.

The dolls were related to issues like Child marriage, Child Labour, child abuse, Drug addiction, Corruption, alcoholism, female abuse, relationship between a teacher and a student, Unemployment, Deforestation etc. There were about 32 dolls in the exhibition.

INTERACTIVE PLATFORM WITH INDUSTRY AND SCIENCE STALWARTS

VIGNANAAMANTHAN

An interaction with science stalwarts was initiated by the Department of Computer science (UG) on September 15, 2017 which provided an opportunity for the students to interact with the most renowned person in the computer science field Prof. E. Balagurusamy who has authored many books in Information Technology. He interacted with the students of third semester and fifth semester BCA and BSc. Course. Prof. Balagurusamy shared his thoughts on the betterment of society. He motivated the students to pursue education, excel in the field to which they belong and serve the nation. He also interacted with the students on bridging the gap between academy and industry, time management and current academic scenario.

GANAKAJNANAMANTHAN

The "Ganakajnanamanthan" - Chief Technical Officer's Talk, an initiative to impart knowledge on IT Startup was organized on 7th December 2017.The Resource Person for the talk was Mr.Wan Hong, Co-Founder, Krazy Bee who shared his views and experiences about his own startup. He said that uniqueness, getting connected and creating online presence is very essential for a great startup. He also discussed on different ways of raising funds for the startup. The students also interacted with the chief guest to clarify about their skill sets required to succeed as an entrepreneur.

INDUSTRIAL VISIT

ISRO VISIT

The students of fifth semester BCA and BSc (CSMS/CSME) accompanied by three faculty members visited ISRO, Bengaluru as part of the industrial visit on 10th July 2017. Mr.H.L. Srinivasa, Scientist, ISRO Satellite Centre briefed the students on various aspects of ISRO and space technology. The students were given an insight to the objectives and the various facilities for research, construction, test, launch, track and control facilities of ISRO. He also elaborated on the different launch vehicles like SLV, ASLV, PSLV and GSLV. Mr.Srinivas also spoke on the various satellite programmes of ISRO like NSAT (Indian National Satellite System), Indian Remote Sensing satellites (IRS), Radar Imaging Satellites and GAGAN satellite navigation system and its applications. He also updated the students on the forthcoming satellites, launch vehicles and launches. He also spoke on the Chandrayaan-2 mission planned to be launched to the Moon by a GSLV including a lunar orbiter, lander and rover, in 2018.The students also visited the clean room which is equipped with harness lab for fabricating onboard harness of the spacecraft and Mechanical lab which is equipped with mechanical ground support equipment required for the assembly, integration and testing of the spacecraft. The students also had a video presentation on the Chandrayan-1 and making of satellites. Mr.Srinivas also informed the students on the wide range of career opportunities available in ISRO.

WORKSHOP

WORKSHOP ON ROBOTICS

A workshop on Robotics was organized on 9th December 2017 to keep the students updated in the Robotics domain. The resource person was Mr. Bharath Kumar, Digital Labz, Bengaluru. 38 students of Special Interest Group for Robotics attended the workshop. The workshop provided hands on session on different types of controlling operations on robotics domain. Several experiments using microcontroller, ultrasonic sensor, LCD and IR sensor was performed for turning on LED lights with the buzzer sounds. The students also carried out an experiment to control the movement of a motorcar using Micro controller and remote and IR sensor. During the workshop, several experiences and enterprises on microcontroller were discussed with particular focus on progress, challenges and gaps in accessing the tool kit.

WORKSHOP ON PC HARDWARE AND ASSEMBLING

A workshop on PC Hardware and Assembling was conducted on 31/07/2017 and 1/08/2017 for first semester and third semester BCA students to impart the knowledge on the basics of personal computer hardware. The resource person for the workshop was Mr.R.Janardhanan, IT Certified Professional & Career Consultant, ITE Learning Solutions, Salem, Tamil Nadu. Theoretical aspects on the various PC components like Motherboard, raiser cards, various types of connectors, jumpers and expansion slots were discussed. The workshop also enlightened the students on memory concepts like its classification, performance monitoring, virtual memory, paging and formatting of hard disk. Demonstration on partitioning the hard disk and removal of virus from an infected pen drive through Hiren boot disk , Windows 7 installation on a system , disassembling and assembling of the PC components etc. were provided.

WORKSHOP ON R

A workshop on R was conducted for III BCA A, III BCA B, III BCA C, III BCA D and III ,VBSc.(CSMSCSME) students on 28th August 2017, 29th August 2017, 30th August 2017, 31st August 2017 and 1st September 2017 respectively from 9 AM to1 PM. The resource persons for the session were Prof.Suni AjayKumar and Prof.Liji George, faculties of the department of Statistics. The workshop aimed to introduce the basic concepts of R software for data analytics and data visualization. Various R tools on basic Data Analytics like assignment operators, basic R functions, matrix construction, built in statistical functions, construction of frequency distribution were introduced.

WORKSHOP ON PHOTOSHOP
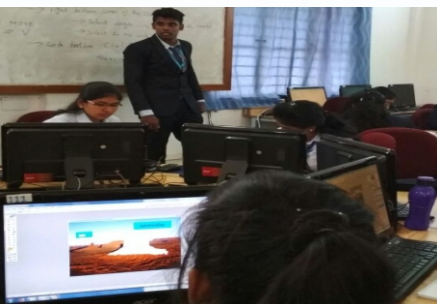
ACM –W Student chapter organized a one day workshop on Photoshop, "PIXEL-Digitally Creative" on 22nd November 2017 for 23 women students of the department. The Resource Persons were Mr.Ajith, Mr.Thomas from IV Semester BCA and Mr.Jonah Filmore, Mr.Jacob David from VI Semester BCA .who covered the basics of Photoshop editing for the participants. It was a hands on session to learn the basics of Photoshop like form and layer handling, dealing with colours, working with images etc. The participants also learnt to design brochures and posters with various tools.

GUEST LECTURES

SPACE TECHNOLOGY

Mr. H.L. Srinivasa, Scientist, ISRO Satellite Centre briefed the students of III Semester BCA and BSc. (CSMS/CSME) on the various aspects of ISRO and space technology on 1st July 2017. The speaker discussed the launch of various satellites like Aryabhatta, Chandrayan, IRM and its purposes. He talked on how the scientists spend their days inside the satellite. He elaborated on the components used for making the satellites. He uncovered the reasons for launching Indian satellites from Sriharikota and usage of American components for constructing Indian satellites. Speaker also inspired the students by highlighting the roles of computer graduates in space technology. He also explained on destruction of obsolete satellites, avoidance of space jam and international space stations and committees.

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MACHINE LEARNING UNDER TECH GIANTS

A session on "Machine Learning under Tech Giants" was organized for the third and fifth semester BCA and BSc. Computer Science students on 15th July 2017 .The resource person was Mr. Sawrav Roy, Senior Software Development Engineer, Amazon Fulfillment Technologies. The speaker differentiated on rule based and adaptable learning. He quoted the difference between how a machine works when it is made to do a routine task having pre-defined set of rules and when it has find an adaptable solution. The speaker emphasized that we go for machine learning when the human expertise for a task doesn't exist or when humans are unable to explain their expertise or when the solution has to be adapted with changes in the environment. He also explained the various forms of machine learning-association analysis, supervised learning, unsupervised learning, and reinforcement learning to name a few. He explained the working of a simple perceptron model, multilayer perceptron, spiking perceptron and convolutional perceptron. He also emphasized that the aim of a learning algorithm is always to minimize the error loss with every passed data set and mentioned two core learning algorithms WCore and Back Propagation. The speaker then mentioned about Tensor Flow which is an open source library available for machine learning which can be used to create simple to complex machine learning algorithms. He also mentioned that students can use Scikit to learn Python's breadth for math and science related ML problems. Finally he concluded the session with the job opportunities available to students in this domain as a developer and ML Scientist.

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NETWORK SECURITY

A guest lecture on Network Security was organized on 31st August 2017 for the special interest group of 120 students from BCA and BSc (CSMS/CSME). The guest speaker, Dr. S.Senthil, Director, Department of Computer Science and Applications, Reva University, Bengaluru spoke on the concepts of networks, security and the need for network security. He elaborated on four stages of dealing with network security like authentication, privacy or confidentiality, integrity and non-repudiation. He enlightened the students on various security tools of cryptography and signatures. The speaker also briefed on Symmetric and Asymmetric key cryptography. Encryption and types of encryption algorithms such as Substitution ciphers, Symmetric key cryptography, Caesar cipher and Geometric pattern encoding were discussed in the session.

DATA ANALYTICS

To impart knowledge on the fundamentals of Data Analytics a guest talk on Data Analytics was arranged on 19th August 2017 for the students of Data Analytics Special Interest Group. The resource person was Dr. Jayashree R, Professor, Department of Computer Science and Engineering, PES University, Bengaluru. Prof. Jayashree explained the term Data Analytics and the importance of mathematics, statistics and computing in Data Analytics by connecting it to several examples where data analytics is applied on a day to day basis. The professor enlightened the students on structured, semi-structured, unstructured data and two common types of analytics -Predictive and Prescriptive. Dr. Jayashree also elaborated on the steps involved in data analytics and the two data analytics tools "WEKA" and R.

IoT – A CONNECTED WORLD

Mr. Hemant Mahsky, Technology specialist at Honeywell Technologies solutions, Bangalore benefitted the 120 students of Data Analytics group on 6th January 2018 with a talk on the introduction to Internet of Things (IoT). The speaker addressed the basics of IoT, smart city, smart sensors and applications of IoT. He talked on IoT security technologies and future scope of IoT. The speaker also enlightened the students on IoT architecture, gateway, ecosystem architecture, connectivity architecture, client device, server device and OCF architecture and applications of IPV6.

SCIENCE EXHIBITION

GALAXIA

Galaxia 2K17, the brainchild of the computer science department, is a platform for Jayantian computer wizards to showcase their inventiveness. Months of hard work resulted in the implementation of ideas in the form of executable projects which was clearly a crowd puller. The exhibits imparted a flame of inspiration to the spectators.1278 people visited Galaxia 2K17, which included students and teachers from other departments of our college and neighborhood schools and colleges. A total of 126 projects were showcased among which swing pump, CNC machine, KJC e-Learning project pulled the attention of the visitors. Straight curves, Matheca, Fair Ground Game, Assignment problem, Propeller LED Clock, Android Controlled Spy, World of CS, Towers of Hanoi, Infinite Cruiser, Operation Reforger were some of the interesting projects. The projects were categorized and judged in five different subjects. The winners of GALAXIA were awarded by cash prize at the valedictory function of Xactitude. The chief guest and the visitors were quite impressed with the explosion of Jayantian talents.

Young Mathematicians..

Most Innovative Project of Galaxia-2k17

ASSOCIATIONS

KNOWLEDGE KINDLE GROUP

Knowledge Kindle Group provides eight different technologies with 817 students registered for the various new technology based groups. There are eight special interest groups in the department to satisfy the craving of knowledge in a particular field of computing. Various activities like guest talks, seminars, workshops are arranged from the Knowledge Kindle Groups to keep the students updated in their area of interest. Cloud computing group allows the students with various computing capabilities to store and process data either in a privately-owned cloud or on a third-party server located in a Data Centre thus making data-accessing mechanisms more efficient and reliable in knowing all the services and instance to run in the servers with various operating systems. Data analytics group aims enabling the students to use analytics in the field of analyzing which is the rapidly growing and much used in the industry. Students learn to use of increase in IT agility, flexibility, and scalability while creating significant cost savings in the virtualization group. IT administration facilitates the students in becoming the IT admins responsible for the upkeep, configuration, and reliable operation of systems. Machine learning group provides opportunities for the students in understanding unsupervised learning and be used to learn and establish baseline behavioral profiles for various entities used to find meaningful anomalies. Contemporary programming imparts knowledge to students to enforce a logical structure on the program being written to make it more efficient and easier to understand and update. The Internet of things (IoT) group enlightens the students on the applications and future of this technology. Students of Network security enables the students of the group to understand the policies and practices adopted to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources.

COMMON INTEREST GROUP

Common Interest Group aimed to provide a platform for students to discuss, share and update the knowledge to hone their technical and soft skills. There were nine common interest groups. namely Coding/Debugging, Quiz, Web Designing, Lecture or Presentation, Event Management, IT Manager, Electronics, Mathematics and Statistics. The Coding and Debugging community analyzed the logic behind few applications and discussed on common programming errors. The Quiz community shared the current happenings in the IT domain and organized quiz competitions during the community meetings. The Lecture/Presentation community concentrated on improving the paper presentation skills of the students. The web designing community provided the students with an introduction to HTML and hands on session on Photoshop. The event Management community aimed to develop the organizing and leadership skills of the students. The IT Manager community sharpened the various managerial skills of students through various activities. The statistics community analyzed the data on various problems and solved various statistical problems. The electronic community provided the students an understanding of various electronic components and projects and the mathematics community solved various problems and puzzles during the session.

INNOVATIVE CLUB

The innovative club aims to foster innovation in the young minds of the students by providing them opportunity to do projects as diverse as robotics and animated games pertaining to the fields of Mathematics, Statistics, Electronics and Computer Science. Galaxia is the Intra College Science Project Exhibition which offers the passionate a stage to display what they find fascinating.

EXTENSION ACTIVITIES

SOCIAL OUTREACH PROGRAMME

Learnt that life is not easier all the time.

To sensitize students about the realities of the society and to develop people oriented attitudes and concern for others the Computer Science Department organized Social Outreach Programme for the second year students on 1st August, 16th August, 18th August, 24th August and 14th September 2017 for the students of IV BCA A, IV BSc (CSMS / CSME), IV BCA B, IV BCA C and IV BCA D respectively from 1.30 PM to 4.30 PM. The students of each class accompanied by two faculty members visited four ashrams namely Alamba Charitable Trust, Home of Hope, Morning Star and Holy Family Home for the Aged as part of the programme.

The students supported the ashrams by providing grocery items, vegetables, fruits, snacks and toiletries. The students entertained them with few cultural performances and also conducted several games for the inmates. Every student had an opportunity to add a new experience to their life where they could meet people who are entirely different from those whom they met every day. The students experienced the happiness of giving when they spend their valuable time showcasing their talents and putting a smile on the faces of each and every inmate of the ashram. All the students tried their best to make each and every inmate happy and feel being loved and taken care of and they were very successful in doing it.

COMPUTER LITERACY PROGRAMME

opportunity to experience the teaching profession. Students also experienced the joy of knowledge sharing. After meeting the school children, our students realized how privileged they are and how they must stop complaining about small discomforts. Also, realized how the role of a teacher will help the students to shape the future of the students.

The Department of Computer Science (UG) organized the Computer Literacy Program (CLiP-2k17) on 13th and 14th December 2017. It is a social outreach program in which the students of BCA and BSc. (CSMS/CSME) visited the Government schools of Kyalasalahalli, Kothanur and K.Narayanapura, Bengaluru to impart the knowledge on basic computer skills to the school children through the theory and practical sessions.

Students of the department were enlightened by the social responsibility towards the society. They had the

XACTITUDE

Xactitude 2K17 was a two days National level Inter-Collegiate computer science fest envisaged by the Computer Science Academy where students from top colleges across India can showcase their intelligence and creativity in myriad facets of information technology. The fest was well organized under the guidance of Faculty Coordinators Dr.Anthony Vincent and Prof. Ayshwarya B and the leadership of student coordinators Mr. Abraham Samuel Bokki (VI BSc.CSMS) and Ms.Mathuri Singh (VI BCA C).There were 18 colleges participating in the fest with a total of 159 participants.

There were 14 events conducted namely IT Quiz, Coding & Debugging, Photoshop War, Gaming, Movie Making, Lecture Contest, Math Event, Stat Event, Electronics Event, Treasure Hunt, Pick n Speak, Web Designing, Best Tech Team and Exhibit Contest. The inaugural function took place at 9:15 AM on 9th February 2017, in the SKE Auditorium. Speaking on the occasion Rev. Fr. Augustine George, Vice Principal, Kristu Jayanti College appreciated the efforts of the department and motivated the students by striking a chord on the opportunities available for the present generation. The Chief Guest of the day, Mr.Sudhansu Panigrahi, Centre Head, Bangalore, UST Global spoke on the emerging technologies in IT Industry to aspire the students and highlighted the current trends of the job market. The inaugural session was followed by the various events which were held in the Main Auditorium, Mini Auditorium I and computer labs.

The valedictory function took place at 3.30 PM in the Main Auditorium on 10th February 2017. Rev.Fr. Lijo P Thomas, Head, Dept. of Computer Science addressed the gathering and appreciated the efforts of faculty and students for the success of Xactitude 2017. Mr. B K Kulkarni, Business and Life Coach, Former Vice President, Siemens, Bengaluru talked on the importance of developing the creative ideas to cope up with the current changes in the technology. The star of Xactitude 2K17 was won by Mr. Santhanudey, participant from St. Alosiyous College, Mangalore. The overall championship of Xactitude 2K17 was bagged by St. Alosiyous College, Mangalore. Beyond doubt the fest provided a vast learning experience for the students.

SYNCHRONIZE

SYNCHRONIZE 2K17 is an intra-collegiate IT fest organized by the Computer Academy-Intellectual club of the Department of Computer Science (UG),on August 11th, 2017 in order to provide a platform for students to showcase their potentials, develop leadership qualities and team work. The final year students organized the fest with an innovative spirit for the first and second years. The fest provided them an opportunity to organize, participate and showcase their intelligence and creativity in myriad facets of information technology. The fest was well organized under the guidance of Faculty Coordinators Prof. K.Kalaiselvi and Prof. G.Prathap with the leadership of student coordinators Mr. Mohammed Samsudhin (V BCA B), Ms.Jacintha.Z (V BCA A) and Ms.Marlene (V BSc CSMS).The students were grouped into six teams named after MAC components namely Scimitar, Yosemite, Nitro, Cobra, Horizon and Rubicon. The students belonging to these groups competed with each other in 11 different events like Coding & Debugging, IT Manager, IT Quiz, Web Designing, Grapho-Tech, Lecture Contest, Gaming, Best Tech Team, Math, Statistic and Electronic Event. Mr. Kumar Shanmugam, Vice President, Wells Fargo India Solutions Pvt Ltd, Bengaluru was the chief guest for the inaugural ceremony who inspired the students to undertake the project which would serve the society. The group Rubicon bagged the overall championship of Synchronize 2k17. Synchronize was indeed a nourishing moment to all the students.

ACHIEVEMENTS

STUDENT LAURELS

Jayantians won laurels in the intercollegiate fests organized by the following colleges.

- Computantra Ciphertech 2017, Presidency College, Bengaluru
- Interface 2017, Christ University, Bengaluru
- Technovation 2017, St.Clarett College, Bengaluru
- Arty-Fact, St.Annes College, Bengaluru
- Anusandhan 17, CSI Student Chapter, St.Clarett College
- Eureka 2017, Christ University, Bengaluru

FACULTY ACHIEVEMENTS

- Prof.Ranjitha M and Prof. Vinothina V were awarded the degree of Doctor of Philosophy (Ph.D) in Computer Science.
- Prof. Vani Chakraborty has qualified UGC- NET Examination held in November 2017.

FACULTY PUBLICATIONS

1. Dr. Vinothina, "An Approach for Workflow Scheduling in Cloud Using ACO", CSI Golden Jubilee Convention, Big Data Analytics. Advances in Intelligent Systems and Computing, Volume 654. pp-525-531, Springer, Singapore.,978-981-10-6619-1
2. Prof. Kalaiselvi K, "Generation of Fittest key using genetic algorithm to enhance the performance of AES 128 bit algorithm"Journal of Advanced Research in Dynamical and Control Systems" ,June 2017,ISSN 1943 023X.
3. Prof. Gopika.S," Object recognition using the principles of deep learning architecture ", ARPN Journal of Engineering and Applied Sciences, Volume 12, No,12, June 2017,ISSN 1819-6608
4. Prof. Mary Jacob, Prof. Aswin Herbert Sathish," Accurate and Efficient Diagnosis of Brain Tumour Disease using kernel SVM"   International Journal for scientific Research and Development" , Volume 5 Issue 2321 0613
5. Prof. Mary Jacob, Prof. Aswin H Sathish , "Accurate Brain Tumor Prediction System From The Large Volume Of Data Using Network Partitioning Aware Ensemble Classifier Method " ,International Journal of Computer Engineering and Applications, Volume XI, Issue XI, September 2017, ISSN 2321 – 3469
6. Prof. Mary Jacob, Prof. Aswin H Sathish, "A Review on Educational Data mining Techniques and Recommendation Model in analyzing Student's Performance", International Journal of Computer Engineering and Applications, Volume XI, Issue XI, September 2017,ISSN 2321 – 3469
7. Prof. Amjad H Khan M K, Prof. Nagendra S,"A Study on the Electro Encephalography control schemes for pattern recognition", International Journal of Computer Engineering and Applications", Volume XI, Issue XI, September 2017, ISSN 2321 – 3469.
8. Prof. ManasaManjunath,"Increased Productivity and reduced water wastage through automatic communicating devices with stored threshold values in agriculture", International Journal of Computer Engineering and Applications, Volume XI, Issue XI, September 2017,ISSN 2321 – 3469 .
9. Prof. Gopika S,"Analysis of NSS Image Characteristics" , International Journal of Computer Engineering and Applications, Volume XI, Issue XI, September 2017,ISSN 2321 – 3469
10. Prof. Sandhya Soman , Prof. Vani Chakraborty, "Survey paper on methods used for the extraction of retinal vessels for diabetic retinopathy" , International Journal of Computer Engineering and Applications Volume XI, Issue XI, September 2017, ISSN 2321 – 3469
11. Prof. SaravanaKumar,"A Study on the Artificial Intelligence in Top Generation and Multi document Summarization " , International Journal of Computer Engineering and Applications,Volume XI, Issue XI, September 2017, ISSN 2321 – 3469.
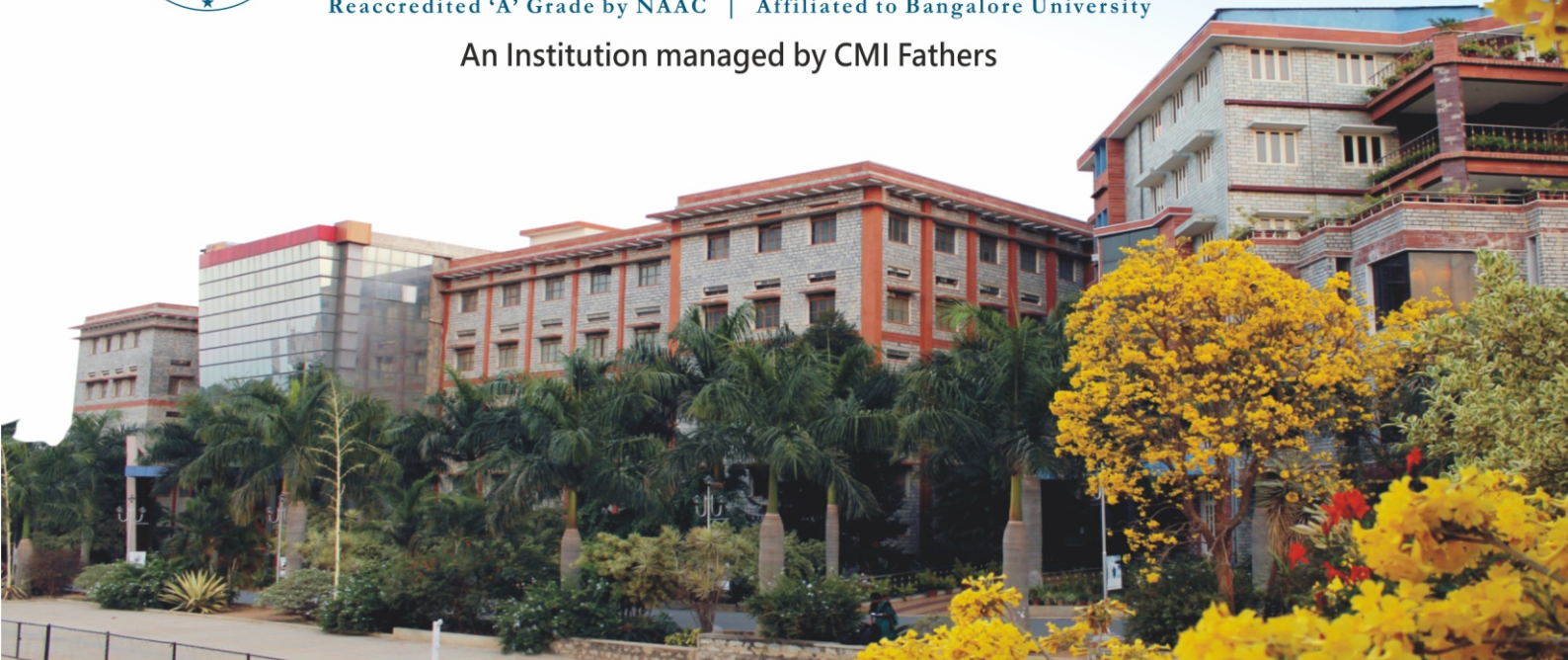
PHOTO GALLERY

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Interface

Kristu Jayanti College Autonomous

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