



ENQUEUE()

Issue : 03

January 2019

Volume : 02

Dept. of Computer Science and Engineering

Message from the Head of the Department



I am happy to present this edition of our departmental newsletter. Even though it is a lot of effort in gathering data on what information is worth reporting every six months, the reactions from our colleagues, alumni and students have made it worthwhile. Our faculty and students have been working hard, in research, in bringing new research grants and new research thrusts and reaching cutting edge research in teaching by creating new courses. The creation of newsletter every six months gives us an opportunity to take a stock on how we are progressing towards becoming an even Computer Science Engineering department. Striving for continued progress and betterment of our research, education and service to community, are very important to us. In the last six months we had success in multiple areas. Recent MoU with IBM and Samsung R & D has added value to departmental research activity by providing a development environment on areas such as Artificial Intelligence, Communication and IoT. Few of our faculties are awarded by industry for their excellent research works as papers publications and completion of consultancy projects. Several industry experts from NOKIA, CISCO, VMware, and HP have visited us and various

plans for industry-academic partnership are under various stages of finalization. Industry visit to Morgan Stanley, AIRBUS on University relations Event held useful for the growth of Centre of excellence in Data Science and Artificial Intelligence. Many University academicians from SUNY Binghamton University, Florida University, Indian Statistical Institute, IISc Bengaluru and others have visited us for academic and research interaction. A team our faculties worked to make an international Conference-a successful event. Many of our faculty members worked over past six months to formulate certain changes in curriculum – both undergraduate and postgraduate levels. A lot more is in this newsletter – which I cannot fit in the next 6 months, and beyond.

-Dr Ramakanth Kumar P

Vision

To achieve leadership in the field of Computer Science & Engineering by strengthening fundamentals and facilitating interdisciplinary sustainable research to meet the ever growing needs of the society.

Mission

- To evolve continually as a centre of excellence in quality education in computers and allied fields.
- To develop state-of-the-art infrastructure and create environment capable for interdisciplinary research and skill enhancement.
- To collaborate with industries and institutions at national and international levels to enhance research in emerging areas.
- To develop professionals having social concern to become leaders in top-notch industries and/or become entrepreneurs with good ethics.

Events hosted by our Department

IEEE-CSITSS-2018

The CSITSS Team organized a conference on Virtual Reality, Internet of Things- Social Media, Mobility, Analytics and Cloud



Computing (VI-SMAC) on the 20th, 21st and the 22nd of December 2018. The conference emphasized on current research work in computational systems and Information Technologies. A platform was created to deliberate various sustainable solutions in the broad areas comprising Social Media, Mobility, Analytics and Cloud Computing (SMAC). Eminent speakers from research organisation, industries, academic institutions and professionals were invited for sharing knowledge, expertise and experience in the identified emerging trends. The first day featured a Pre-Conference tutorial on Virtual Reality and on the second day and the third days, various plenary talks and Paper presentations were held.



Technical Talk on Big Data Analytics

A workshop on “The Future work in the era of Big Data and Artificial Intelligence” by Arizona State University, USA was organized by the Department of Computer Science and Engineering, RVCE on the 25th of September 2018. Dr. Usha Jagannathan, Graduate Program chair and Ms. Niky Chokshi, Recruitment advisor conducted the session. The delivered talk

covered the importance of Big Data and Artificial Intelligence.

Cisco IoT Hackathon

Cisco IoT Hack 2018, held on the 2nd and 3rd of November 2018, was a computer programming competition which involved all Engineering colleges with a reach to approximately 5000 students in India. It was held for a period of 2 days in the campus of RVCE and challenged the students to think out-of-the-box and offer innovative ideas to build smart applications which will help address major real- time problems in our country.



This was a joint effort by R.V. College of Engineering & Cisco to involve young students in proposing solutions for problems faced by the society in day-to-day functioning. The hackathon was a hands-on, collaborative effort focused on finding, developing, and implementing real-world solutions that could be experimented with in real- world companies. They were given a challenge element in the midnight where they had to build a solution for the disabled people as well.

Technical Talk on WebOS Open Source Services

A technical talk on “WebOS Open Source Services and its applications “ by Mr.Vikas Kumar Sharma Program Manager and Mr. Kalpesh from LG Soft India Pvt .Ltd. webOS is a web-centric and usability focussed software platform that is truly open to enable unimaginable technology. The speakers shared the insights of the webOS platform to the students. The program was coordinated by Prof.Nagaraja G.S.



Technical Talk on Convolutional Neural Networks

A technical session on Convolutional Neural Networks was organized on the 14th of Sept. 2018. The workshop was technically supported by IBM India Ltd. Mr. Amit Vaid, Data Scientist, IBM Financial Crimes Insight IBM India Software Labs, took the session on the essentials of ANN, Convolutional Neural Networks, Deep learning, etc. The sessions also covered the implementation of CNNs using Tensorflow. This event was coordinated by Dr. B. Sathish Babu, Professor, CSE, and Mrs. Pavitra H, Asst. Professor, CSE.

Technical Talk on The Future of AR and VR

A technical talk on "Potentials of AR and CR in Future" was arranged on 18/09/2018. The talk was delivered by Mr. Vikas Dixit, Technical Expert at Siemens, Bengaluru who was accompanied by Ms. Arpita Dutta, HR head at Siemens, Bengaluru. Mr. Vikas discussed about the applications of AR, VR and mixed reality and their applications in industry. One of the use case discussed by Mr. Vikas was about knowing the customer needs and preferences using VR and MR technologies. He also gave insights about potential advancements in the near future.

Industrial Visit - CISCO

The Department of Computer Science and Engineering, RVCE organized a "CISCO VISIT" towards Industrial visit event on 27th AUG 2018 to CISCO Cessna Business Park, Bengaluru. Many sessions were held to make students familiar with Technology at CISCO. Morning session commenced with a speaker Dharmendra Rangain, Director. IT. Customer Strategy & Success with Welcome address and introduction to CISCO, followed by session on IT infrastructure by Prashant Damodaran, Sr. Engineer expertise in Networks.

Post lunch session commenced with Data centre visit and demo on CISCO devices by Wilson Chacko, Program Manager – Data Centre followed by discussion with Ram Viswanathan, Manager. Regional IT, India & SAARC.



Technical Articles

Performance Analysis of Mesh-based NoC's on Routing Algorithms - Dr. Anala M.R

Network-on-Chip is an essential communication subsystem for System-on-Chip (SoC) architectures as it has the capability to meet the requirements of scalability, ease of fabrication and advancing technologies. The pith of the NoC approach is to use a macroscopic concept such as packet-switching and infrastructural IPs which allows access to individual functional-IP block. The most important features that distinguish NoC architectures are network topology, routing, and packet priority. However, parameters such as buffer size, power consumption, and area overhead should also be considered while dealing with network performance. The NoC architecture is comprised of three parts - Resources, Routers and Resource Network Interface.

Multicast routing for mesh-based using DSR in wireless sensor network - Dr. Nagaraja G.S

A sensor network consists of multiple stations called sensor nodes which are portable and sensitive. Each sensor node consists of power source, controller which performs specific operation and to store the sensor output, transceiver receives the commands and transmits information to computer, and transducer to generate electrical signals based on sensed effects. There are many characteristics and challenges when developing and improving various parameters in multicast routing protocols like bandwidth, security, network topology, node deployment, energy constraint and different characteristics in wired which uses physical cables to share data between devices and wireless sensor networks which uses infrared and radio frequency signals to share the information, and network scalability, due to these parameters multicast routing protocols are necessary. Multicasting is a method used for data sharing by routing data from one stream to another stream between huge quantity of destinations. As the restoration of nodes in dynamic networks like on-demand multicast approach and routing protocols like tree-based multicast structure, mesh-based multicast structure etc., can be applicable depending on various applications which are highly not fixed in ad-hoc routing protocols.

An Efficient Score Level Multimodal Biometric System Using ECG and Fingerprint - Prof. Girish Rao Salanke N.S

Biometric system is a security system that uses human's unique traits to identify and authenticate the user. Biometrics refers to biological traits of a human that are often categorized as physiological traits like fingerprint, iris, face and behavioral characteristics like signature style, voice and typing rhythm. The Biological signals like Electrocardiography (ECG), Electromyography (EMG), and Electroencephalography (EEG) have not been explored to biometric applications as their scope was limited to medical applications only. Recent survey suggests that these biological signals can be explored as a part of the

biometric application. The main objective of this paper is to explore the possibility of using the ECG as a part of multimodal biometric. ECG has lower accuracy but fusing it with a traditional biometric like fingerprint yields a higher accuracy rate and it is really difficult to spoof the system. The proposed multimodal biometrics system has an accuracy of 98% with the false acceptance rate of 2% and almost 0% of false rejection rate.

Pipeline for Real-time Anomaly Detection in Log Data Streams using Apache Kafka & Apache Spark” - Dr. Soumyarani C.N

Anomaly detection is a standout amongst the most critical assignments so as to construct a system that is trustworthy and secure. The aim of anomaly detection is to detect significant deviation of the system behavior from that of the normal behavior. This approach is broadly used on static data, for instance on dumps of log data. Most systems require a real-time detection of anomalies with a specific end goal to lessen the harm that can be caused by the ignorance of an anomaly or detection at a later time. The recent implementations of the anomaly detection are mostly based on self-learning methods. Machine learning has brought about a significant transformation in the field of anomaly detection. One of the methodologies for anomaly detection depends on clustering algorithms. The implementation discussed in this paper utilizes a time-series evaluation approach for anomaly detection. The paper explains the pipeline built for anomaly detection and the visualization of the results.

2D to 3D Conversion Of Images Using Defocus Method Along With Laplacian Matting For Improved Medical Diagnosis - Prof. Manon Mani

In today's medicine field, there is an increasing need to be more efficient and to be able to develop new techniques to diagnose and cure different diseases and ailments. From the wide range of medical images, there has been an initiative to concentrate or restrict the implementation to X-rays, since X-ray images are the only valid analogies that can be compared to vision from a camera with a perspective. Due to the older diagnosis methods implemented, there is an excess of 2D data when compared to 3D data. Therefore, conversion of 2D data to 3D plays an important factor in arriving at the required result with higher efficiency since it is more cost effective to convert 2D images to 3D rather than create a 3D image from scratch. In this work, the first concept used is of defocus method to perform the depth estimation of the given X-ray image, with the help of edge detection and the second concept used is, gradient magnitude calculation along with image matting using Laplacian process to produce a 3D structure of the 2D image.

PQ_Poll: Quality of Service Guaranteed Delay Sensitive Polling Algorithm for WiMax Network - Dr. Nagaraja GS, Prof. Vishalakshi Prabhu

Demand for broadband wireless access is rising as the need for user mobility and data access at all times increases. WiMAX also

called IEEE 802.16 provides various Quality of Service (QoS) support at medium access control (MAC) layer to various classes of traffics such as audio, video, images and text. Scheduling plays an important role in providing QoS. IEEE 802.16 standard has not specified a standard scheduling mechanism and hence the service providers can implement the suitable algorithm. Therefore all WiMAX equipment makers and service provider give priority to scheduling. This article concentrates on polling mechanism. Polling is a centralized scheduling which is initiated by the Base station to poll mobile stations. Most of the proposed polling mechanisms introduce delay when the numbers of mobile stations under a given base station increases. The goal here is to introduce new polling algorithm based on two level priority queues to reduce the delay in a dense WiMAX cell. This in turn assures the QoS guarantees for delay sensitive applications.

2D to 3D Conversion Of Images Using Defocus Method Along With Laplacian Matting For Improved Medical Diagnosis - Prof. Manon Mani

In today's medicine field, there is an increasing need to be more efficient and to be able to develop new techniques to diagnose and cure different diseases and ailments. From the wide range of medical images, there has been an initiative to concentrate or restrict the implementation to X-rays, since X-ray images are the only valid analogies that can be compared to vision from a camera with a perspective. Due to the older diagnosis methods implemented, there is an excess of 2D data when compared to 3D data. Therefore, conversion of 2D data to 3D plays an important factor in arriving at the required result with higher efficiency since it is more cost effective to convert 2D images to 3D rather than create a 3D image from scratch. In this work, the first concept used is of defocus method to perform the depth estimation of the given X-ray image, with the help of edge detection and the second concept used is, gradient magnitude calculation along with image matting using Laplacian process to produce a 3D structure of the 2D image.

PQ_Poll: Quality of Service Guaranteed Delay Sensitive Polling Algorithm for WiMax Network - Dr. Nagaraja GS, Prof. Vishalakshi Prabhu

Demand for broadband wireless access is rising as the need for user mobility and data access at all times increases. WiMAX also called IEEE 802.16 provides various Quality of Service (QoS) support at medium access control (MAC) layer to various classes of traffics such as audio, video, images and text. Scheduling plays an important role in providing QoS. IEEE 802.16 standard has not specified a standard scheduling mechanism and hence the service providers can implement the suitable algorithm. Therefore all WiMAX equipment makers and service provider give priority to scheduling. This article concentrates on polling mechanism. Polling is a centralized scheduling which is initiated by the Base station to poll mobile stations. Most of the proposed polling mechanisms introduce delay when the numbers of mobile stations under a given base station increases. The goal

here is to introduce new polling algorithm based on two level priority queues to reduce the delay in a dense WiMAX cell. This in turn assures the QoS guarantees for delay sensitive applications.

Research and Publications

Journal Publications

- “A dynamic security scheme for OppNets using Cognitive Computing” - Dr. Satish Babu
- “A Holistic Learning experience to students of undergraduate computer science & engineering program”-Dr. Deepamala N

Conference Publications

- A Comparative Study to Determine a Suitable Legal Knowledge Representation Format” - Dr. Minal Moharir
- “An Approach to Detect Fileless Malware and Defend its Evasive mechanisms” - Dr. VinayHegde
- “Packet scheduler for meeting deadline in 4-4,1-4 Architecture ” - Dr. Ashok Kumar
- “Stable Reduced Link Break Routing Technique in Mobile Ad Hoc Network” - Dr. Rajashree Shettar
- "Framework for Detecting Metamorphic Malware Based on Opcode Feature Extraction" - Prof. Prapulla S.B
- “A cost effective Audio-Video Summarizer for summarization of presentations and Seminars” –Prof. Pratiba
- “VoIP Smart speech encoding mechanism using high performance computing 3.Security Architecture for IOT based home automation” - Dr. Nagaraja G.S, Dr Vinay Hegde.

Books authored by Faculty

“Computational Analysis and Understanding of Natural Languages: Principles, Methods and Applications” Publisher: Elsevier

Authors: Dr. Shobha G, Dr. Shanta Rangaswamy, Dr. Deepamala N ISBN: 978-0-444-64042-0

Achievements of our Faculty

Our department has the most experienced and highly qualified faculty supporting the students and the department as a whole.

Dr. Nagaraja G. S was recently elevated to become the IEEE Senior Member. Dr. Anala M. R. was recognised as NVIDIA DLI University Ambassador by the NVIDIA Corporation. Dr. Manjunath A.E got his Post-Doc Fellowship from NIT Trichy. Dr. Minal Moharir received the best paper award in Nokia White paper competition which was held as a part of Nokia Day in Bangalore. Dr. Sowmyarani C N

received the best paper award in the 4th IEEE International Conference on Computing, Communication, Control and Automation. Her paper was on “Object Classification based on Spatial Orientation using Ultrasonic Sensors”.

These are only a few of many outstanding achievements of our



faculty. They have also been invited to share their knowledge about various subjects on several occasions. Dr. Manjunath A.E rendered a talk on “Introduction to Python” at UPES, Dehradun. Dr. Minal Moharir and Sharvani G. S gave a talk on “Advanced High Performance Computing Technologies” at Dr. Ambedkar Institute of Technology, Bangalore. Dr. Vinay Hegde was invited to talk about “Introduction to Machine learning” at the Govt First grade degree college ,Vijayanagar. Dr. Sowmyarani C N shared her knowledge on “Applying Big Data Analytics to High Volume Finance Applications” at the FinTech Lab, New Jersey Institute of Technology.

Student Activities

Our department's pride is its multi-talented students. They are a part of various activities apart from academics such as cultural and technical clubs. Popular clubs include CARV (for Theatre arts) , Alaap (for musicians), Footprints (for dance lovers), etc.



These clubs are active all-round the year and are quite popular amongst other Engineering colleges. The department encourages and provides total support to the students for their all-round development.



A lot of students are active members of these clubs and have as well won name and fame while competing against various colleges across the nation.

Students interested in various interdisciplinary areas are encouraged to join some of the innovative technical clubs. From college level to International level, the students of our department have brought laurels to the institution. The college and the department support them with technical as well as financial aids. Dedicated mentors for each of the clubs help in catering to the needs of the team. These clubs include Ashwa Racing, Team Chimera, Project Jatayu, Team Helios and others. These clubs conceive and develop everything from racing cars to mini satellites. Our students have been an integral part of these clubs



since their conception.

Our Students are also part of various other activities organized by other clubs such as Rotract and participate in activities including Blood donation camps, Paper drives, etc.

Articles and Poetry

A Case Study: Cyberattacks and the role of Cyber Security. - Shyam A, Suchit T.E.

From personal information to government infrastructure , we live in an ever increasing framework of connected systems. Protecting these systems of vital and sensitive data is no longer an option but a broad-level responsibility. This has necessitated the

formation of a highly reverend bubble which takes high priority in multinational companies and organisation around the world, the branch of cyber security. Cyber security is simply the procedures and practices implemented in networks to prevent and protect access to sensitive data by unauthorized dangerous sources. According to the Global Risk Report , 90% of the companies fail to recognize their efficiency to counter attack a cyber-attack , and with vulnerabilities on the rise with corresponding increase in artificial intelligence systems that take vital decisions it becomes a matter of urgency to catch up to any breach or flaw. From the takeover of the WannaCry ransomware to the vulnerability exposure of processors by the Meltdown , breaches are ever and an organized study of its characteristics and consequences with corresponding measures taken at the international and national level must be documented for further research leading to better and more prepared approach to counter attack similar breaches in future.

A ransomware crypto virus which attacked on a global scale in May 2017 targeted the systems running on older versions of Microsoft's Windows Operating system. It encrypted the system's data and demanded ransom to be paid in Bitcoin currency. A total of 300,000 computers across 150 countries were affected and the damage was estimated to range from hundreds of millions to billions of dollars .It propagated through EternalBlue, which is software vulnerability within the windows environment, discovered by shadow brokers a few months before the attack . It used AES and RSA encryption ciphers to hold the users'/ company' s data and displayed an Instruction Page which demanded ransom from the user/ company to decrypt the files. The vulnerability (MS17-010) was linked to Microsoft machines and could affect Windows Vista, 7, 8, 10, XP and versions of the Windows Server software. Microsoft released emergency patches a few days after the attack was discovered. Two other flaws from the side of the hackers were discovered a few days later. On May 14th a British network engineer, found that if the ransomware searched for a website and if the website was found, the ransomware would stop the spread. This was used as a kill switch for a few days before the hackers updated the virus. Later French Security researchers found out the unerased log of the encryption used in non-rebooted systems and used it to decrypt systems. Microsoft released patches for all windows versions, Symantec, Kaspersky, avast and all the leading cyber security based companies released anti-virus programs to curtail the spread of WannaCry immediately.

The whole incident could have as well been avoided if users had updated their systems on being notified . Microsoft Corporation as an entity could have forced the updation of the OS once it is aware of such vulnerabilities within the softwares ecosystem even if it meant harming its relations with the clients.

Contributors:**Suchit**

"Reach out and Inspire someone" - words that define me inside out.

**Shyam**

A photographer and an artist at heart, loves reading books and philosophising.

"Beware Stranger " - Spandana Kottur

Beware stranger!

Do not let your thoughts linger For even the most beautiful, Can be the most deceitful

Trust has made some brothers forever, But once broken, it cannot be undone.

While some say broken can be joined never,

I believe that a thread with knots is stronger than one with none

Handle it with love, for it is a thing fragile Because when betrayed, the heart does ache, Tears do flow and mountains do break

Beware stranger!

For even the most beautiful Can be the most deceitful

Contributor:**Spandana**

19 years old. Believes "Fantasy is a necessary ingredient in living, it's a way of looking at life through the wrong end of a telescope."

On the nature of Selfishness - A Mathematical consideration - A Suryanarayanan

Often the most intriguing facts are those that are counterintuitive. An elephant falls just as a feather does. A Sun made of bananas is just as hot.

Here is another.

It is in your personal, completely selfish and uncompromising

best interest, to care for and contribute towards the betterment of those around you. Let me explain.

Imagine yourself at a Pizza party. There are quite a few people, but just a few Pizzas. In this *perilous* situation, you may only eat more Pizza at the expense of someone else. *It is in your best interest to be surrounded by people who eat very little.*

Now, again, imagine yourself at a group outing at Onesta Rajarajeshwari Nagar. Here, there is all the Pizza in the world to be had, but just a few people. Here, the worth of your penny depends on how much Pizza your group can stomach. *It is in your best interest to be surrounded by people who eat well.*

In the realm of mathematics and game theory, the first situation is what is called a "*zero sum game*" where a theoretical winner cannot exist without a loser. Here, winning amounted to getting the largest amount of Pizza. The second situation however, is an example or a "*positive sum game*" where the existence of a winner does not mandate the existence of a loser. Here, winning meant securing the best value for money, as well as eating a lot of Pizza.

So, what does it mean to win a Mathematical game of life?

For centuries, the amount of land available to a nation was the literal foundation of its economy, providing for its agriculture and shelter. The only way to improve the economy beyond stagnation, was to conquer other lands and pillage for resources. In other words, it was a *zero sum game*. This was because the yield of the land was fixed. That is, until before the industrial revolution.

The industrial revolution truly changed the world, making it possible to do more with less, drawing upon the power of innovation. Now it is no longer necessary to rob other nations for self-advancement. The world of innovation is a *positive sum game*, where our *best play is to promote innovation*. However, that is not all. The key to understanding the mathematically sound benefits of humanitarianism, lies hidden within the nature of innovation.

Innovation, like any other commodity, is constrained by supply and demand. Innovating is not cheap. Quality innovation is a product of extensive research, and hence, innovation requires incentive. The simplest form of incentive, is money, or in other words, people with enough money to pay for convenience. *Demand*. On the other hand, innovation, is born off the hard work of innovators

To be a supplier of innovation, one needs a good education to build a career upon. To be a consumer of innovation, one must have the money to afford it. Both of these are a power vested only upon those who are well off. It is in our best interest to promote innovation and hence,

"It is in our best interest to help more and more people afford innovation."

Hence proved.

(Based on the video : Egoistic Altruism by *Kurzgesagt*)

Contributor:**Suryanarayanan**

An aspiring creator, delving into any field within reach. Art, Photography, and music are the first manifestations of his pursuits

Student Achievements

Besides academics, our department is widely known for its multi-talented students. We see a large number of students from the department represent college at collegiate, national and international Levels. The department gives i its complete support and encouragement to all its students to participate in these activities.

Many exciting Hackathon are organized frequently and the students enthusiastically take part in them. The Microsoft Academia Accelerator Team had organized a code.fun.do hackathon at the South regional level and Aravind B S, Anirudh K M and Ashmita Raju of the CSE department bagged the first place. Jaya Prasad Re, Abhishek Krishna and Aditya Giridhar Anddy G won the First Runner up in the South regional code.fun.do hackathon. Chidroop is a highly talented individual who represented RVCE at the Microsoft Student Partners Asia Summit 2018 and Machine learning hackathon-Microsoft Student Partners Asia Summit 2018 held in Taiwan. He was one among 100 participants from across 12 countries. The technical teams in our college participate in National and International levels and have gained nationwide recognition.

The cultural teams as well have a glorious history of accomplishments. The CARV teams have dedicated and talented individuals whose love for their passion is never ending. The Kannada CARV team has been triumphant in various StreetPlays, Mimes, MadAdds and centre stage performances at various avenues. Prerana K S, Pranava B M, Rakshith H V, Swathi N R and Akhilesh Acharya are some of the achievers. Arunachalam Suresh, Ruchita R.Biradar, Adithya V, Soumadeep B, Akshata Katyayana and Abhilash S from English CARV recently won awards in the annual cultural-fest organized by IIT Madras (Saarang). Ram Srinivas from Aalap is the lead Bassist in the prominent Carnatic progressive band, "Project Mishram" whose achievements are never ending. Karthikeya, an amazing singer has won several awards on various occasions and a proud member of the Alaap club.

The Editorial Board

We thank our department for giving us the opportunity to proudly present the 3rd issue of our newsletter, Enqueue().

In here, we present to you a glimpse of the various activities and events which were organized and held at our Department in the

months of August to December, 2018. We also present to you our Faculty's outstanding achievements and their publications in various reputed journals and conferences. Finally we showcase various achievements and awards won by our highly talented students and present a few articles.

We thank all our teachers and students who have kindly obliged to contribute articles and other content.

Prof. Sharadadevi Kaganurmath

A highly confident, hardworking and a budding actor who is also an upcoming YouTuber.

Swathi N R

A Classical musician with a love for Mathematics and Philosophy. Foodie and an avid chess Player :)

Vishak S Bharadwaj**Write to us:**

We sincerely hope you that you found our Department's newsletter informative and enjoyable. Do provide us with your valuable feedback by writing to us at enqueue@rvce.edu.in.