



# TECH BYTES

APRIL 2022

DEPARTMENT OF CSE

## In This Issue

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- Faculty & Student Publications
- Achievements
- Club Activities
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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

CMR INSTITUTE OF TECHNOLOGY

#132, AECS LAYOUT, ITPL MAIN ROAD, KUNDALAHALLI,

BENGALURU —560 037, KARNATAKA, INDIA

+91 80 28524466 / 77 | <http://www.cmrit.ac.in/>

## Vision

To be a center of excellence in computer science and engineering education producing competent professionals for a successful global career contributing to the society.



Dr. Sanjay Jain  
(Principal)



Dr. B. Narasimha Murthy  
(Vice Principal)

## Mission

- To build a faculty team with industry and academic exposure, capable of moulding students into competent professionals, supported by adequate computing and software resources.
- To prepare the students for a global career in computing by enriching the curriculum
- To develop industry relevant programming and soft skills through training programs, vibrant student clubs and student internships.
- To engage with industry and institutes of repute and collaborate in academics, research and development involving faculty and students.



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[https://www.youtube.com/channel/UCpi96paEfl6WS-Xf0\\_xyL9Q](https://www.youtube.com/channel/UCpi96paEfl6WS-Xf0_xyL9Q)

## Editorial Note

It gives me great joy to bring you this issue of the Tech-Bytes bi-annual Newsletter of the department of Computer Science and Engineering. The department of CSE always strives to improvise something new in its academic activities throughout the year. Every edition of the department newsletter highlights all department activities and achievements.

I would like to thank each and every faculty coordinators from the department for their timely reports on various events conducted in the department. My profound sense of gratitude to the department in giving me an opportunity in editing this newsletter.



Mrs. Sreedevi N  
Department of CSE

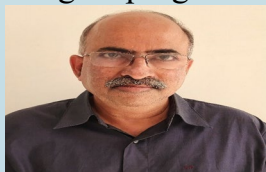
## **ABOUT THE DEPARTMENT**

The department of Computer Science & Engineering has been in existence from the inception of CMRIT in 2000. The department is a recognized research center under VTU and offers doctoral programs in computer science and Engineering.

The Department of Computer Science & Engineering is permanently affiliated to Visvesvaraya Technological University (VTU), Belgaum and is also recognized by Govt. of Karnataka and approved by AICTE, New Delhi. UG program is approved by the National Board of Accreditation (NBA), New Delhi.

The department aims to provide students with a strong foundation in Computer Science and enable them to integrate their knowledge with other disciplines for carrying out innovative discoveries.

Many of the computer science graduates from CMRIT step directly into computer related career positions in both private and government agencies, while some choose to continue their education in graduate degree programs.



## **MESSAGE FROM HOD**

Dear Stakeholders,

I hope this message finds you and your family well, and in the best of your spirits.

The last two and a half years was very challenging for us in achieving our academic outcomes, because of covid-19. With all these challenges we were still committed to doing everything to keep the learning of our students going in the best way possible. We have streamlined our online learning sessions to our best in order to enable students to cope with the semester in a better manner. With all your support and cooperation we, the department of computer science and engineering at CMRIT have proved ourselves to be no less than the tech-savvy software industry. I'm looking forward to returning to the offline lessons as soon as possible.

This newsletter captures the various achievements, of both students and faculty from August to February this year. The students and the faculty have made the best use of the online platforms to organize and take part in various activities including student club events, hackathons, and industry guest lectures. I congratulate all the coordinators, winners and the participants for their admirable efforts in the various events. With cooperation from our students, faculty team, and all the stakeholders, we have been able to turn the odds into opportunities. With this, I truly believe we would be able to win the battle against the pandemic. Stay safe; Stay well!

## INDUSTRY CONNECT ACTIVITIES

### Topic: Guest Lecture on " To demonstrate AWS compute services"

**Delivered by:**

Mr. Yesudian Rajkumar JK,  
Consultant, Quick Heal,  
Pune, India.

**Date:**20/11/2021



### Topic: National level STTP on "Capture the Flag – Tools to handle Cyber Security Vulnerabilities"

**Resource Person:**

Samarth Bhaskar Bhat,  
Technical director,  
Reverse Engineering Infosec,  
Bengaluru.

**Date:**27/12/2021 to  
31/12/2021



# INDUSTRY CONNECT ACTIVITIES

## MOUs signed with different Companies

S.No	Name of the Industry/ Company	Status
1	Proton Expert Systems & Solutions Private Ltd, Bangalore	Internship ongoing. Project being defined.
2	Information Sharing and Analysis Center, New Delhi	Project/Consulting services defined
3	Indian Servers Private Limited, Vijayawada	Project on deep learning defined.
4	Sienna ECAD Technologies Private Limited ,Bangalore	Consulting Project work in Machine learning



## Events organized under CoE – Cybersecurity

- Training program on "Cybersecurity" by The Cyber Diplomat LLC team from 30th Aug to 9th Sep 2021
- Organized webinar on “Cyber Resilience and Awareness” by Mr. Chandan Ram, Co-Founder, Xcellent learning on 8th Dec 2021.
- Organized National level STTP on "Capture the Flag – Tools To Handle Capture The Flag - Tools To Handle Cyber Security Vulnerabilities" by Samarth Bhaskar Bhat, Technical director,Reverse Engineering Infosec, Bengaluru from 27th to 31st Dec 2021.
- Organized Cyber Jaagrookta Diwas – Poster Making Competition (PO-STAR) on 5th Jan 2021.
- Organized expert talk on "Security aspects in Financial transactions using Blockchain Technology" by Dr. Geetha S, User Interface Architect, Yeeyes Circuit Solutions, Bengaluru.on 2<sup>nd</sup> Feb 2022.

## Events organized under CoE - Machine Intelligence & Big Data

- Organized webinar on “Introduction to Graph Neural Networks” by Prof. G. Radha Krishnan, CMRIT on 27th Oct 2021 .
- Organized STTP on “Fundamentals of Machine Learning Using Python” by Prof. Jagadishwari V, Prof. kavitha P , Prof. Preethi Sheeba, Prof. Radhakrishnan G and Prof. Anil D, CMRIT from 29th Nov to 3rd Dec 2021.

## The I&E Cell activities

CMRIT is selected as an IIC Mentor institution -one among 50 institutions across India, based on its performance. CMRIT will mentor 5 institutions in the area of Innovation and Entrepreneurship with funding support of two lakhs rupees from the Ministry of Education, GoI.

- I&E Cell organized workshop on “Technology Invention” by Prof. Shreekanth M Prabhu, Prof. Shyam P Joy, Prof. Preethi, Prof. Shanti, Prof. Manoj Challa, Prof. P. N. Singh, Prof. Radhakrishnan and Prof. Sagarika, CMRIT on 20th Sep 2021.
- I&E Cell organized workshop on “Patent Drafting and Filing for Innovative Projects” by Prof. Vivian Mary John, CMRIT on 30th Oct 2021.
- I&E Cell organized an expert talk on “National Education Day” by Dr. Shanthi M.B., Associate Professor, Innovation Ambassador, MOE’s Innovation Cell, Govt. of India on 11<sup>th</sup> Nov 2021.

## TIE YOUR LACES (TYL) Hackathons at CMRIT

- TYL Online Hackathon "Java/Python/C++" organized from 7th to 8th Jan 2022 :1st Place – Team Debug Entity (Pratik Kumar Mishra, Shraddha Sahay, Sachin Kumar, Shanu Kumar). 2nd Place – Team Umeed (Smriti Lammichhane, Saswat Pandey, Rahul Rai).
- TYL Online Hackathon "ML/Big Data/CC/FSD" organized from 17th to 18th Jan 2022 :Winners - Team Umeed ( Rahul Rai, Saswat Pandey, Smriti Lammichhane, Himanshu Verma)

## FACULTY PUBLICATIONS

SI NO	Faculty Name	Paper Title
1	Dr. Paras Nath Singh	Masked & Unmasked Face Recognition Using Support Vector.
2	Dr. Shyam P Joy	Smart Grievance Redressal System.
3	Sreedevi N	Analysis of CNN leaf-based disease classification on different plant species by sequential & dense-net learning model.
		Influence of climatic conditions on spread of Covid' 19-An analysis using Machine learning methods.
4	Dr. Paras Nath Singh	Speech to Indian Sign Language Translator.
5	Dr. Paras Nath Singh	Reverse Image Search Improved by Deep Learning.
6	Manjula HT	Analytics and Big Data in the Health Domain.
7	Pratham Majumder	Constrained Optimization based Routing for Multipath and Multi-hop Propagation in WSN.
8	Dr. Paras Nath Singh	Masked & Unmasked Face Recognition Using Support Vector Machine Classifier.
9	Dr. Paras Nath Singh	Reverse Image Search Improved by Deep Learning
10	Poonam Tijare and Jhansi Rani P	procreation and application of sentiment based dictionary to reveal popular event topics trends on twitter platform.
11	Dr. Sanchari Saha	Security in IoT using Artificial Intelligence.
12	Dr. Paras Nath Singh	BPM supported model generation by contemplating key elements of information security .
13	Dr. Manoj Challa	IOT based automated hydroponic farming system
14	Dr. Kavitha	'Dysgraphia Classification based on the Non-Discrimination Regularization in Rotational Region Convolutional Neural Network
15	Dr. Manoj Challa	IOT based automated hydroponic farming system
16	Dr. Kavitha	'Dysgraphia Classification based on the Non-Discrimination Regularization in Rotational Region Convolutional Neural Network
17	Dr. Jagadishwari	Sentiment analysis of Covid -19 Vaccines



# FACULTY ACHIEVEMENTS

## Faculty awarded with PhD degree

Faculty Name	Area of Research	University
Dr. Kiran Babu T S	DTN	VTU
Dr.Dantaluri Sudha	Cloud computing	VTU



Dr.Kiran Babu T S



Dr. Sudha D

## Faculty who received Service Awards on Founders day.

Faculty name	No of years of service in CMRIT
Prof. Sagarika Behera	15 years
Prof. Manoj Challa	10 years
Prof.Savitha S	10 Years
Prof.Kiran Babu	10 years
DR. PN Singh	5 years
Prof.Sherly	5 years
Prof.Shanthi MB	10 years
Prof.Sudha D	10 years
Prof.Poonam Tijare	5 years
Prof. Kartheek	5 years
Prof.ShivraJ	5 years
Praveen D	5 years
Namitha	10 years
Prasanna Kumar	5 years



CMRIT and the Department of CSE heartily Congratulates Dr.Manoj Challa for getting promoted as **Associate Director –Student Affairs**.  
**Wishing sir ALL THE BEST! for the new post.**

# FACULTY ACHIEVEMENTS

## Few more feathers added to the achievements of Dr. Paras Nath Singh



- Published a book chapter -Brain Computer Interfacing in the book “Machine Learning Espousal in Signal Processing: Application, Challenges & Road Ahead - CRC Press, Taylor & Francis Group, USA:
- Dr. Paras Nath Singh was awarded as the best paper presenter for the paper entitled “Reverse Image search improved by deep learning at the IEEE MysuruCon 2021
- Received appreciation letter from AICTE- Student learning Assessment Cell for submitting questions for the ASLAP project
- Invited as Doctoral Advisory Committee member at VIT University, Vellore



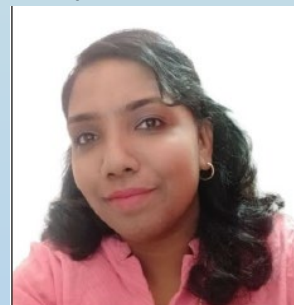
Congratulations! to Prof.Sherly Noel for receiving appreciation letter from Principal, CMRIT, for successfully completing the Megaproject “CSE Examyly tool”.

## The Department of CSE Congratulates our faculty for getting promoted as Associate Professors

Dr. Jagadishwari  
Associate Professor,  
Dept. Of CSE



Dr. Preethi Sheeba Hepsiba  
Associate Professor,  
Dept. Of CSE



## FACULTY ACHIEVEMENTS

- The department congratulates Dr. R. Kesavamoorthy, for delivering a software design document for the client company -Kalpavruksha Travel Solutions Pvt. Ltd. As part of consultancy work in the department.
- Dr.Shreekanth M Prabhu of CSE department received Best Paper Award for paper titled “Linguistic Classification using Instance-based Learning” in CIS 2021 conference organized by SCRS at Christ College
- Prof. Anjali Gupta of CSE department received International Level IBM Badge: Big Data Foundations organized by IBM.
- Prof. Poonam Tijare of CSE department served as a Journal Reviewer for Open Science Journal.
- Prof. Manoj Challa of CSE department served as a Resource Person for one day “NBA FDP on CO-PO mapping and attainments” organized by CBIT Campus, Kolar on 11th Dec 2021.



## Knowledge upgradation by faculty

### Mooc Courses Completed by faculty

- Anjali Gupta – Big Data101
- Shyam P Joy-2021 Complete Python Boot Camp
- Savitha N J-Big Data Computing
- Dr. Paras Nath Singh-Using databases in Python - Michigan University/Coursera - 97.88%
- Archana Hombalimath –Python programming master class
- Dr.Sanchari Saha- Programming for Everybody (Getting Started with Python)”- by University of Michigan
- Sherly Noel –Complete UI / UX and Figma

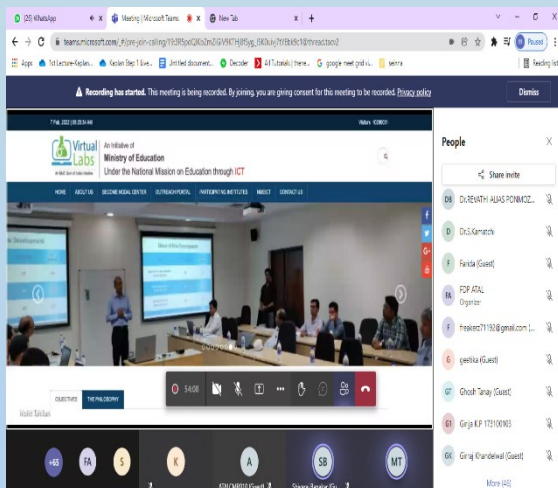
### Tech talk delivered by faculty

- Dr. Jagadishwari V-Process Mining
- Dr. Shyam P. Joy- Boolean Functions and a Classification
- Mr. G. Radhakrishnan-Page Rank Algorithm
- Dr. P.N. Singh- Speech recognition and natural language processing in Python
- Ms. Poonam Vijay Tijare-Novel Clustering Correlation Approach and its Application with Sentiment Analysis
- Dr. Kavitha P-Human Pose Estimation using OpenCV and Mediapipe
- Ms.Sreedevi N-Landslide Assessment using MCDA
- Ms. Sudha D- Recurrent Network for Deep Fake detection
- Ms. Sherly Noel-ReactJS
- Ms. Savitha S-Amazon Web Services
- Mr. Kartheek GCR-Debugging using GDB and Codeblocks
- Ms. Savitha NJ- AutoCorrection using NLP
- Dr. Preeti Sheba-Cloud Offerings (Google, Amazon, Azure)

# TECHNICAL CLUB ACTIVITIES

## FOSS CELL ACTIVITIES

- Organized Workshop on “GIT and GITHUB Version Control” by Mr. Pratik Mishra and Mr. Shanthanu Hada on 9th Dec 2021.
- Organized Workshop on “Leveraging Open-Source Opportunities” by Dr. Mohith P. Tahiliani, Professor-CSE, NIT, Karnataka on 6th Jan 2022.
- Organized Workshop on “GSOC Proposal Writing” by Mr. Ish Bosamiya Student at -PES, Bangalore, Karnataka (Qualified GSOC TWICE ) on 13th Jan 2022.
- Organised AICTE ATAL Sponsored 5 days FDP on Scilab and XCOS-FOSS alternative for MATLAB and SIMULINK on 7<sup>th</sup> Feb to 11<sup>th</sup> Feb 2022
- Organized Workshop on “Basic Git and GitHub training” by Prof. Shivraj Prof. Shanthi MB and Prof. Pushpa Mohan on 24th Feb 2022.



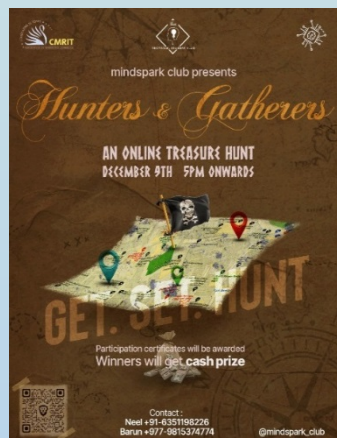
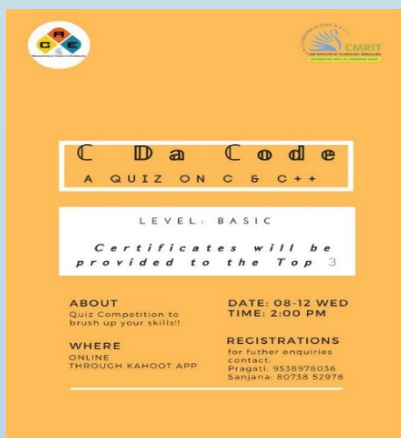
**Scilab Programming and XCOS Resource person –Dr. Mahesh Anand S . Founder and Chief Consultant, Scientific Computing Solutions (SCS - India)**

**Keynote Speaker: Dr. Mohit P. Tahiliani, Dept. of CSE, NITK Surathkal, India on OPEN SOURCE Usage and Benefits**

## DEPARTMENT CLUB/CLUBS ACTIVITIES

The Ace, Cybernauts, Moziety, Hacker earth, Geeks for geeks and Mind spark clubs of the department organized the following technical events

- Code Raiders,
- Debug that Code 2.0,
- "Techbate 2.0",
- Coffee with Code,
- Technodium 2021,
- C Da Code,
- January Rumble,
- Debug the bug,
- Hunters and gatherers.



# STUDENT PUBLICATIONS

Students	Journal or Conference	Title of the paper
TUHIN MAJUMDER, PUNYASHA CHAMERJEE, SUNROSE SHRESTHA	5th World Conference on Smart Trends in Systems, Security and Sustainability, London, UK	Dual-message Compression with Variable Null Symbol Incorporation on Constrained Optimization based Multi-path and Multi-hop Routing in WSN
1CR17CS090 PAVAN RAJKUMAR MAGESH 1CR17CS091 PILLAI VIGNESH 1CR17CS132 SAYAN PAL 1CR17CS109 RICHARD DELWIN MYLOTH	Computers in Biology and Medicine, Elsevier (Scopus Indexed)	An Explainable Machine Learning Model for Early Detection of Parkinson's Disease using LIME on DaTSCAN Imagery
1CR17CS161 SWEDEL VIOLA FERNANDES 1CR17CS143 SHRUTI SINGH 1CR17CS170 VAIBHAV PADMANABHA	Third International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV), IEEE	MCIDS-Multi Classifier Intrusion Detection system for IoT Cyber Attack using Deep Learning algorithm
1CR17CS013 ANUSHA D 1CR17CS147 SINDHU J 1CR17CS030 CHAITHANYA C	Third International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV), IEEE	A Review on Movie Recommendation System Using Machine Learning
1CR17CS055 K SNEHA LALITA 1CR17CS082 NEHA SHIVAKUAR 1CR17CS163 T SRILEKHA 1CR17CS008 AISHWARYA J	6th IEEE International Conference on Recent Trends in Electronics, Information & Communication Technology (RTEICT 2021)	A Deep Learning Model for Face Expression Detection
1CR17CS138 SHIVAPRASAD S.B. 1CR17CS153 SAI KRISHNA TEJA 1CR17CS155 SUHAS C V 1CR17CS177 VISHAL V	International Research Journal of Engineering and Technology (Scopus Indexed)	Image Caption Generator using CNN-LSTM model
1CR17CS079 NAVYA R 1CR17CS089 PATANI RUCHA SHARADKUMAR 1CR17CS125 SAIPRASAD R REVANKAR 1CR17CS130 SARVESH NADIGER	2021 Global Conference on Recent Developments in Computer and Communication Technologies (GC-RDCT 2021)	Detection and classification of brain, breast and skin cancer using image analysis
1CR17CS187 RAHUL KUMAR SINGH 1CR17CS191 SUBHODH KUAR YADAV 1CR17CS189 SANDEEP KUMAR SAH	2021 Second International Conference on Electronics and Sustainable Communication Systems (ICESC)	An Empirical Comparison of Handwritten Character Recognition Using Machine Learning
1CR17CS095 PRATEEK KUMAR SINGH 1CR17CS094 PRAKYATH JAIN	ICT4SD 2021, published in LNNS Book Series, Springer (Scopus Indexed)	Location Dependent Safety Application for Women
1CR17CS040 EBENEZER B 1CR17CS197 DIVYA REDDY	Turkish Online Journal of Qualitative Inquiry (Scopus Indexed)	Virtual Pinboard - A method for displaying information using web based augmented reality on smartphones.
1CR17CS010 ALISHA KULKARNI 1CR17CS035 DHANUSH V 1CR17CS019 ARCHITH VINOD KARIYAL	3rd International Conference on Integrated Intelligent Computing Communication & Security ICIIC-2021, Atlantis Press, Web of Science. (awarded Best Paper)	Speech to Indian Sign Language Translator

# STUDENT ACHIEVEMENTS

## VTU RANKS

**CMRIT heartily Congratulates the 2020 VTU Rank holders in the Computer Science and Engineering Discipline.**

- Ms. Ramya T bagged the VTU I rank and Gold metal
- Ms.Shreya bagged VTU 5<sup>th</sup> rank
- Mr.Prakyath Jain bagged VTU 6<sup>th</sup> Rank



Ms.Ramya T-VTU I Rank and Gold Medalist



Ms.Shreya R- VTU 5<sup>th</sup> Rank



Mr.Prakyath Jain-VTU 6<sup>th</sup> Rank

## Finalists of The TIE pitchfest 2022



**Four students Pratik Mukesh Bharuka, Vaishnavi Patil, Arpan Abhishek and Yashwanth Jain from 7<sup>th</sup> Semester CSE D won the TIE Pitchfest 2022. The students have been awarded a cash price of ₹75,000 and have been qualified to represent India at the TIE Global Pitch level, the finals of which will be happening in the month of September 2022 at Stanford University, USA.**



# STUDENT ACHIEVEMENTS

## Student placed in Amazon with 30L/PA package

USM	STUDENT NAME
1CR18CS070	HARSH DHIMAN
1CR18CS012	AKHIL ANAND
1CR18CS013	ALAJANGI NIHARIKA
1CR18CS014	AMAN KAPOOR
1CR18CS015	AMAN KUMAR
1CR18CS023	ANKIT YADAV
1CR18CS029	ARJUN KHANDURI



## Students placed in Mercedes Benz with 10L/PA package

USN	STUDENT NAME
1CR18CS070	Shivani Guptha
1CR18CS012	Vivek Raj
1CR18CS013	Azan Sheran
1CR18CS014	Pricilla C
1CR18CS015	Kirti C
1CR18CS023	Apurva Kumar Gupta



## STUDENT ACHIEVEMENTS

•Rajneesh Khare of CSE department got selected for UiPath Student Development Program for the year 2021-2022.

•S Swetha Shree(CSE) won Cash Price of Rs.10,000/-at the FKCCI Manthan-2021 Competition.

•Vishnu Vinitha and Nikhil KB of CSE department scored Centum in State Level E-Quizon“ The Missile Man of India "organized by S.Velaichamy Nadar College Madurai, TamilNadu.

### Centum scorers in 2020-21 ODD Semester VTU Exams

USN	Student Name	Subject
1CR20CS052	Dhanush B Bayannagari	EGDL
1CR20CS090	Joshitha M	EGDL
1CR20CS111	Manoj S	EGDL
1CR20CS170	SanketSaurav	EGDL
1CR20CS125	NeerajKumar	EGDL
1CR20CS119	Moksha Sri S	EGDL
1CR20CS164	Sahana Ba	EGDL
1CR20CS043	Chandra Pratap Singh Chauhan	EGDL
1CR20CS077	Harshendu mahto	EGDL
1CR20CS094	Karloshyadav	EGDL
1CR20CS102	Lekhana K R	EGDL
1CR20CS109	Manisha Kumari	EGDL
1CR20CS173	Satrasala Gunasekhar Babu	EGDL
1CR20CS125	NeerajKumar	Calculus and linear Algebra

# STUDENT ACHIEVEMENTS

## AICTE NATIONAL LEVEL CHATTRA VISHWAKARMA AWARDS 2020

Mr.Zain Ahmed was awarded First prize in a category “ promote micro, small and medium enterprises to achieve the mission of AtmaNirbhar Bharath” for presenting prototype/ Solution of advanced UV sanitization chamber.



## TYL –Hackathon java/C++/Python

Students Smriti Lammi chhane, saswat pandey, Rahul rai won II place in the national level TYL-hackathon organized in CMRIT



## FKCCI-MANTHAN 2021

Students Mr.Prathink Mukesh Baruka, Mr.Vaishnavi patil, Mr.Yashwanth jain and Mr.Arpan Abhishek won 5<sup>th</sup> position and a cash prize of rs.25000/- at FKCCI Manthan 2021



## Program Outcomes(POs):

**PO1 Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2 Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3 Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4 Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5 Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6 The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7 Environment and sustainability:** understand the impact of the professional engineering solutions in societal and environmental contexts, demonstrate the knowledge of, and need for sustainable development.

**PO8 Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9 Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10 Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11 Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12 Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## Program Educational Objectives (PEOs):

**PEO1:** To prepare graduates with a strong foundation in engineering, science and technology, and expose them to modern tools for a successful career in industry, entrepreneurship and research.

**PEO2:** To produce graduates equipped with knowledge and skills required to analyze, design and develop system solutions for real world problems.

**PEO3:** To collaborate with industry and professional societies, to produce competent computer science professionals.

**PEO4:** To nurture communication and project management skills of graduates, for them to be good team players and leaders.

**PEO5:** To produce graduates who are ethical and socially responsible.

**PEO6:** To produce graduates who are innovative thinkers and life-long learners.

## Program Specific Outcomes(PSOs):

**PSO1:** Design, implement and maintain business applications in a variety of languages using libraries and frameworks.

**PSO2:** Develop and simulate wired and wireless network protocols for various network applications using modern tools.

**PSO3:** Apply the knowledge of software and design of hardware to develop embedded systems for real world applications.

**PSO4:** Apply knowledge of web programming and design to develop web-based applications using database and other technologies



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