Message from Director

Dear Readers,

"Engineering education is among the key enablers of growth for transforming national as well as global economy. As we continue to strive for academic excellence in engineering education through innovative techniques, ABES Engineering College is fast approaching to become the preferred destination for students from across the country". Equipped with many 'Centres of Excellence', the college encourages its students to participate in a creative exploration of knowledge involving hands-on activities which provide 'learning by doing' environment far different from exam centric rot-learning. We are making best efforts to keep pace with fast emerging technologies so that we are in a position to prepare our students for industry as well as entrepreneurship. Accordingly, the entire academic processes and echo system are being aligned with outcome based education (OBE) system which has become the hallmark of teaching-learning platform in ABESEC.

Our every action is focused in creating an ambience suitable for fostering quality education along with research & development activities. The testimony to this is the quality certification of the college by NAAC, NBA and ranking by NIRF.

We are looking forward to develop in each of our faculty, staff and student, the ability and passion to work wisely, creatively and effectively for the betterment of the mankind.

Prof. (Dr.) Shailesh Tiwari

Message from HoD-CS

Dear Readers,

With growing Indian economy and government emphasis on e-governance, CS is progressively visible in-service deliveries in all type of government services. Private companies are even more IT savvy using IT for strategic advantages, efficiency enhancement in addition to better customer services.

Availability of new and cheap technologies has encouraged all sectors to use IT in a big way. The need for qualified and competent IT professionals grows with the growth of the IT sector. Our CS program focuses on developing cutting edge computer professionals to effectively and efficiently fulfil the needs of the market. The course consists of theoretical base of software development and programming skills like C, C++, Java,.NET, Cloud Computing, Networking and Software Engineering among others.

Prof. (Dr.) Pankaj Kumar Sharma

Message from Editorial Team

A thought that has been enduring in mind when it becomes real; is truly an interesting and exciting experience. This news letter was one such cherished work that had its roots in the persuasion. It would be a snapshot of the various activities and advancements for all associated with CS Department, ABESEC. Proper communication plays a vital role in department's development. This newsletter will serve to reinforce and allow increased awareness, improved interaction and integration among all of us. Usually we fail to appreciate the good deeds of many people and activities that happen around us as we are engaged in irrelevant talks and assumptions. It could all change if we just pause to think of what is our contribution to the society from which we have been gifted with this blessed life. The progress of the society is mainly depends on many people who are working behind the scenes, overtime round the clock planning things to the smallest. This newsletter will be a medium to provide proper acknowledgement and respect all of these efforts and its results. This newsletter is intended to be published twice in a year. This Inaugural issue is a brief account of the important events held from July to December 2020 in the department. It is expected that wide support for this mission will be provided through the reader's valuable suggestions and comments. This is only a small step towards a long journey. To achieve progress and to meet objectives we have to cross numerous milestones. This maiden issue of newsletter should inspire all of us for a new beginning enlighten with hope, confidence and faith in each other in the road ahead...... Happy Reading!

*Sugandha Satija-*Editor In-Charge

Vision

To become the world-class student-centered department which fosters high quality learning and research for both undergraduate and graduate students of Computer Science to cater to the ever changing industrial demands and social needs.

Mission

To create a healthy environment for the development of innovative academician professional, entrepreneur pursuit & researchers to fulfil its commitment to research & education of the highest quality with industry requirement and social acceptance at large.

Program Educational Objectives (PEOs)

The Detailed Program Educational Objectives (PEOs) are as follows:-

PEO-1 Graduates shall have the ability to apply knowledge across the disciplines and in emerging areas of Computer Engineering and Information Technology for higher studies, research, employability, product development and handle the realistic problems.

PEO-2 Graduates shall have good communication skills, possess ethical conduct, sense of responsibility to serve the society and protect the environment.

PEO-3 To impart solid foundation in Computational Intelligence, Engineering, Science, Technology and Interdisciplinary courses.

PEO-4 Graduates shall possess academic excellence with innovative insight, soft skills, managerial skills, leadership qualities, Knowledge of contemporary issues and understand the need for lifelong learning for a successful professional career.

PEO-5 To provide a encouraging and disciplined Academic environment, quality of teaching with innovative & modern tools, methods of pedagogy establishing the relevance of technical education as per the needs of the industry and society at large.

Program Outcomes (POs)

The graduates of this program will be able to:

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

2. **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.

3. **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.

4. **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

5. **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.

6. **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.

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

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

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

10. **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.
11. **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 environment.
12. **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 Specific Outcomes (PSOs)

The graduates of this program will be able to:

PSO-1: Develop various applications using open source software tools extensively.

PSO-2: Analyze and implement Web based technology and create IT infrastructure for developing projects as per social and industry needs .

MAGAZINE OF COMPUTER SCIENCE

CS Times is a magazine of Computer Science Department of ABESEC, Ghaziabad which we sought to publish bi-annually. The Department has shown tremendous progress and developments in the area of Research, Teaching and Learning Process. The quality and progress of the department as well as the College solely depends on the performance of its Faculty and Students. The purpose of this magazine is to inform, engage, inspire and entertain a diverse leadership by exhibiting all the contributions and achievement of the faculty members and students, thus presenting an honest portrait of the Department. We would like to place our gratitude to honorable Vice President Shri. Sachin Goel, Director Prof. Dr. Shailesh Tiwari and Head of the Department Prof. Dr. Pankaj Kumar Sharma for providing support and guidance at each step.

Faculty Corner

Department of Computer Science has known for its teaching learning process and Research. The faculty plays an important role in shaping the young minds of the students and future technocrats. Faculties of Computer science are very energetic, knowledgeable and intelligent. They actively participate in Faculty developments Programs, published research papers in International Conferences, peer-reviewed Journals.

Workshops/ Guest Lecture/Seminar Organized and Delivered

Department of Computer Science always believes in the fact that gets in the habit of looking for opportunities, stretch your mind and find possibilities. Department of Computer Science has organized various workshops, guest lectures, seminars organized in the area of Machine Learning, Deep Learning, IOT and Block chain. The workshops and seminar organized by the department un till December 2020 are given bellow:

Co-ordinator: Ms. Vanshika Rastogi , Ms.Poonam Rana
1. **Topic: "How to effectively draft a Research Paper based on the project"**

    Date: 28th November 2020

Resource Person

Ms. Sugandha Satija   Ms. Vanshika Rastogi

Objective: The focus of the workshop is to provide students with an introduction to how effectively draft a Research Paper based on project.

Participants: Faculty and Students

Resource Person

2. **Topic: "Classification Using Machine Learning Techniques on Image Datasets"**
   Date: 2nd November 2020

Resource Person: Ms. Madhuri Gupta

Ms. Madhuri Gupta

Objective: Sessions will create a basic understanding among students to differentiate between Data Science, Machine Learning. The students will be able to work on various Classification problems in various fields such as Biomedical Field in Machine Learning.

Participants: Students

Resource Person

3. **Topic: "Classification Using Machine Learning Techniques on Image Datasets"**
   Date: 3rd November 2020

Resource Person: Ms. Poonam Rana

Ms. Poonam Rana

Objective: Sessions will create a basic understanding among students to differentiate between Data Science, Deep Learning. The students will be able to work on various Classification problems in various fields such as Biomedical Field, Classification problems in Deep Learning.

Participants: Students

4. **Topic: "Brain Tumor Detection in MRI Images using Improved Otsu's Thresholding Method and Supervised Learning Techniques"**
   Date: 11th Novemnber,2020

Resource Person: Ms. Madhuri Gupta

Objective: - The students will get the knowledge to implement the classification problems based on Titanic dataset. This topic will create a basic understanding among students related to Data Science and Machine Learning
Participants: Faculties

5. **Topic: "Fusion of Visible and Infrared Images for Victim Detection"**
   Date: 12th Novemnber,2020

Resource Person: Ms. Madhuri Gupta
Objective: - Students will be able to perform the machine learning techniques on various data types like, numeric, genomic and image dataset. Students will be able to apply this knowledge in making real time projects.
Pa**rticipants:** Faculties

6. **Topic: "Linear Regression Model In-depth Intuition in Machine Learning and its Applications"**
   Date: 26th December,2020

Objective: - Develop a basic understanding of Machine Learning and Understand the
               Linear Regression in Details
Pa**rticipants:** Faculties

Resource Person

Dr. J. Somasekar

Glimpse of Guest Lectures

Glimpse of Workshop
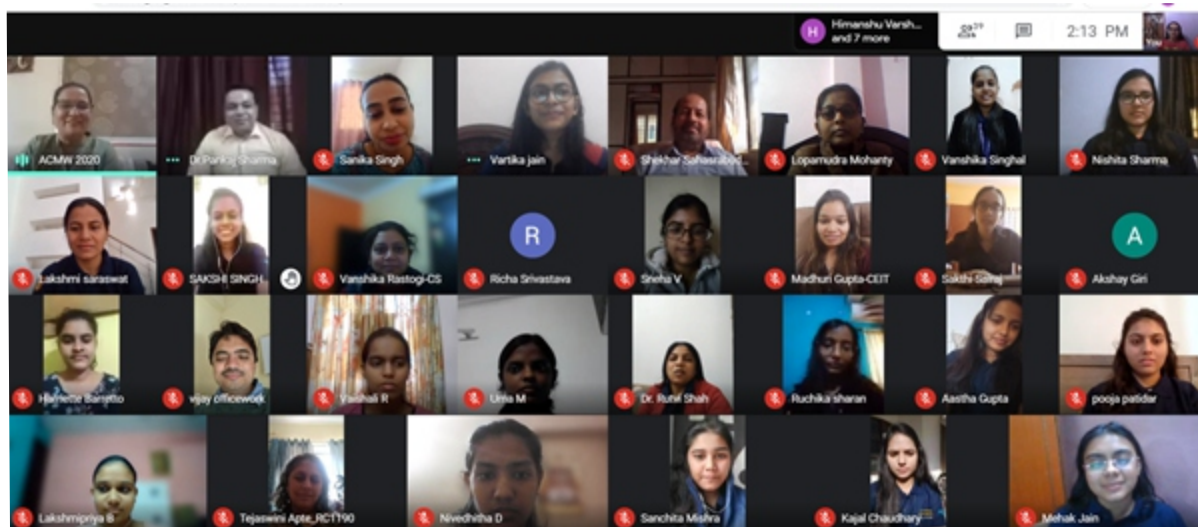
Department of Computer Science

Friday Diary Knowledge Sharing Sessions

Department of Computer Science has organized Friday diary to Enhance and share knowledge in various Research Domain such as Machine Learning, Deep Learning, IOT, Data mining and Block chain. These Knowledge sharing sessions up to December 2020 are described below:

Co-ordinator: Ms. Poonam Rana, Ms. Sonia Lamba

Resource Person

Ms. Surbhi Verma

Session1
Topic: "Cryptography, steganography & its application in research domain"
Date: 18th December 2020

Objective: The Session will be useful to learn security challenges & techniques for data on transmission media.
Participants: Faculties

Resource Person

Ms. Poonam Rana

Session2
Topic: "Convolution Neural Network and its Application in Disease Prediction"
Date: 25th December 2020

Objective: This topic will create a basic understanding among individuals to create a basic understanding of Convolutional Neural Network.
Participants: Faculties

Faculty Publications:

Research is creative and systematic work undertaken to increase the stock of knowledge. It involves the collection, organization, and analysis of information to increase understanding of a topic or issue. Faculty of the Computer Science Department published various research papers in International Conferences like Springer, IEEE and in International Journals (Scopus, SCIE, SCI, ESCI, UGC) indexed. The Research Publications of the Department up to December 2020 are given below:

➢ Madhuri Gupta, "A fusion of visible infrared images for victim detection", HPVI20, 2019-2020.
➢ Madhuri Gupta," Parkinson Disease prediction gauss newton method in feed forward neural network", IJITEE, 2019-20.
➢ Sugandha Satija, "Face Recognition System", IJRASET, 2019-20.
➢ Sugandha Satija, "Study on Caching issues and cache management in Named Data Networking", International Journal of Advanced Science and Technology 2019-20.
➢ Vanshika Rastogi, Sanika Singh, "Car's Selling Price Prediction Using Random Forest Machine Learning Algorithm", SSRN Publication, 2019-20.
➢ Sonia Lamba, "An insight of the recent development in Internet of Things (IoT)", Strad Research, 2020-2021.
➢ Sonia Lamba, "An optimized H6 Transfomerless Grid tied Inverter topology" , Strad Research, 2020-2021.
➢ Vanshika Rastogi, Sugandha Satija, Pankaj Kumar Sharma, Sanika Singh," Machine Learning Algorithm: Overview", International Journal of Advanced Research in Engg. & Technology, 2020-2021**(Scopus Indexed).**
➢ Poonam Rana, "A Novel Deep Learning-based Whale Optimization Algorithm for Prediction of Breast Cancer", Brazilian Archives of Biology and Technology, 2020-2021**(SCIE- Indexed)**
➢ Lopamudra Mohanty, "Various Apriori and FP-Growth Tree Based Incremental Mining Methods", Soft computing for problem solving —SocPros 2020, IIT Indoore, 2020-2021, Springer, **(Scopus Indexed)**

Memorandum of Understanding (MoU) Signed

Department of Computer Science has signed MoU with the objective of enhancing the Collaboration between various software industries and the Institute to bridge the industry- academia gap.

Department of Computer Science are pleased to announce that the FIRST Memorandum of Understanding (MoU) was signed between ABES Engineering College, Ghaziabad, and Thunder Game Studio, Bhuj-Kutch an Indian company on 28.12.2020.

The first MoU was signed and delivered on behalf of ABES Engineering College by Prof. (Dr.) Pankaj Kumar Sharma, HoD-CS in the presence of Ms. Laxmi Saraswat, Assistant Professor Department of Computer Science.

Faculty Development Program (FDP)/ STTP/Conference/ Workshop Attended

Learning is a never ending process. In order to enhance the knowledge and expertise in their core subjects, Faculty of Computer Science Department has attended various faculty development programs, Workshops, seminars. The Faculty Development Programs attended by the faculties of the Department up to December 2020 are described below:

➢ Ms. Poonam Rana attended one week online Faculty development program on Big Data Analytics with Python from 7th Dec. 2020 to 12th Dec. 2020.
➢ Ms. Poonam Rana attended one week on line Faculty development program on IoT and Data Analytics from 7th Dec. 2020 to 12th Dec. 2020.
➢ Ms. Sanika Singh attended one week on line Faculty Development Program on IoT and Data Analytics from 24th Nov. 2020 to 1st of Dec. 2020 at JSS Academy.
➢ Ms. Vanshika Rastogi attended one week online Faculty Development Program on Big Data Analytics with Deep Learning from 18th Aug. 2020 to 22nd August 2020.
➢ Ms. Vanshika Rastogi attended 5 days online Faculty Development program on Data Science 1st Dec. 2020 to 5th Dec. 2020.
➢ Ms. Lopamudra Mohanty attended 5 days online AICTE ATAL Sponsored Faculty Development Program on Applications of AI in Engineering 14th Dec. 2020 to 18th Dec. 2020 at ABESEC.
➢ Ms. Lopamudra Mohanty attended 5 days online Faculty Development Program on Recent Trends in Sensors Technology and Automation from 21st Dec. 2020 to 25th Dec. 2020 at SVNIT.
➢ Ms. Laxmi Saraswat attended 5 days online faculty development program on Internet of Things from 12th September 2020 to 16th September 2020.
➢ Ms. Laxmi Saraswat attended 5 days online faculty development program on Computer Forensics & Cyber Crime from 7th December 2020 to 11th December 2020

Patent Published

Inventions and Innovations play an important role in developing Research aura in the Educational Institution. Faculty has published various patents along with the students of the department in various emerging Technologies like Block chain, IOT, Machine Learning, Deep Learning and Cyber Security Domain. The Patent Published by the Department up to December 2020 are given below:

| Sr. No.	Application Number	Title	Publication Date	Faculty Inventors	Students Inventors
1	202011050695	SYSTEMS AND METHODS TO IDENTIFY AND NOTIFY CROSS BORDER INFILTRATION	Published on 4th Dec, 2020	Ms. Sonia Lamba Dr. Pankaj Kumar Sharma Ms. Surbhi Verma Ms. Lopamudra Mohanty Mr. Shashank	Mr. Sarthak Negi
2	202011050696	SYSTEMS AND METHODS FOR PREDICTION ANDPREVENTION OF VIRAL DISEASE	Published on 4th Dec, 2020	Ms. Sugandha Satija Dr. Pankaj Kumar Sharma Ms. Vanshika Rastogi	Ms. Akanksha Rai, Mr. Aashutosh Jha, Mr. Abhay Chauhan
3	202011050695	SYSTEM AND METHOD FOR REAL-TIME TRANSCRIPTION OF A FIRST LANGUAGE INTO A BRAILLE FORMAT.	Published on 4th Dec, 2020	Ms. Vanshika Rastogi Dr. Pankaj Kumar Sharma	Ms. Ishika Verma, Ms. Astha Rai, Ms. Himani Yadav
4	202011054239	SYSTEMS AND METHODS FOR DYNAMIC AND INTELLIGENT TRANSPORTATION SYSTEM (ITS) FOR SELF DRIVING CAR	Published on 18th Dec. 2020	Ms. Lopamudra Mohanty Dr. Pankaj Kumar Sharma Ms. Sonia Lamba Ms. Poonam Rana Ms. Sanika Singh	Harsh Verma Kajal Chaudhary Sakshi Singh

Certification Courses Attended

S.N.	Name of Faculty	Name of the Certification	Name of University/ institute/ company	Date
1	Dr. Pankaj Kumar Sharma	Leadership and Emotional Intelligence	Coursera	13/06/2020
		Predict Future Product Prices Using Facebook Prophet		03/04/2020
2	Ms. Sugandha Satija	Perform Sentiment Analysis with scikit-learn	Coursera	21/04/2020
		Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning		11/05/2020
		Custom Prediction Routine on Google AI Platform		26/05/2020
		Principal Component Analysis with NumPy		20/04/2020
		Build a Machine Learning Web App with Streamlit and Python		23/05/2020
		Programming for Everybody (Getting Started with Python)		14/05/2020
		Data Visualization with Plotly Express		04/05/2020
		Big Data, Artificial Intelligence, and Ethics		05/05/2020
		What is the mind and what is artificial intelligence?		22/04/2020
3	Ms. Madhuri Gupta	Dimensionality Reduction using an Autoencoder in Python	Coursera	21/04/2020
		Anomaly Detection in Time Series Data with Keras		22/04/2020
4	Ms. Poonam Rana	Natural Language Processing with Python	Udemy	12/12/2020
		Python for Data Science and Machine Learning Bootcamp		12/12/2021
		Python for Computer Vision with OpenCv and Deep Learning		10/12/2021
		Deep Learning with Python and Keras		26/11/2020
5	Ms. Vanshika Rastogi	Introduction to HTML5	University of Michigan	30/8/2020
		Python for Data Science and Machine Learning Bootcamp	Udemy	12/11/2020
6	Ms. Lopamudra	SQL for Data Science	University of California	3/12/2020
		Introduction to Natural Language Processing	Udemy	23/12/2020
7	Ms. Laxmi Saraswat	Machine Learning A-Z™: Hands-On Python & R in Data Science	Udemy	22/12/2020
		"Machine Learning & Data Science Foundations Masterclass".		28/12/2020

5th ACM -W National Level Virtual Hackathon 2020

5th ACM-W National Level VIRTUAL Hackathon 2020 started with an ideology to support and motivate the girls students in the domain of Computer Science. Initially, it was supposed to be in offline mode but the pandemic situation brought new challenges to overcome and it was finally decided that it will happen in online mode. This event was successfully hosted by CS Department of ABES ENGINEERING COLLEGE, GHAZIABAD this year and was a combination of three rounds. On 19th December After continuous coding for 24 hours, the teams were ready with their project. By the end of the hackathon i.e. on 20th DECEMBER, 2020 teams were supposed to submit a 3min video illustration of their project and after that, a final evaluation was conducted with a panel of reputed judges.
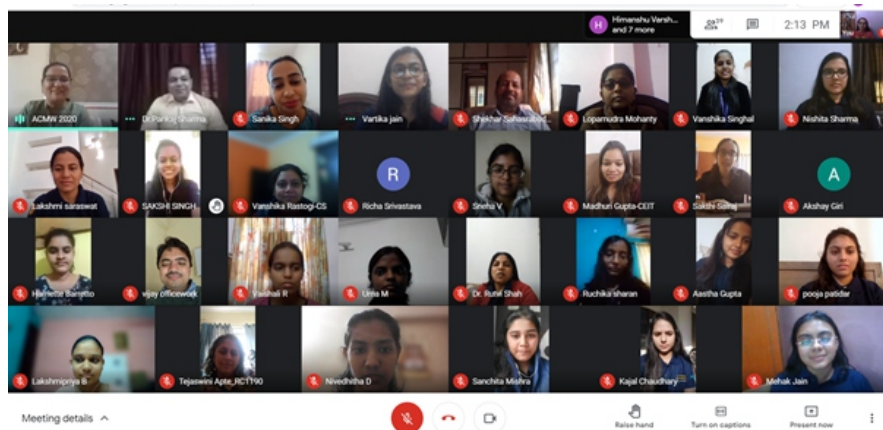
Date: 19th December 2020
Organized by ABES ACM W-Chapter

Student Corner
Participation in 5th ACM-W National Level Virtual Hackathon 2020

By demonstrating and showcasing the technical skills at National Level , One of our student women team bagged third prize and bring pride for the Institution.

3rd Prize (Rs. 12,000/-) : Team Error-404 – Sanjana Jain- College: ABES Engineering College, Ghaziabad

➢ **Project Title :** System for prescribing the drug in hospitals and it's substitute availability in the medical shops of the area/city.

Date: 19th December 2020

Smart India Hackathon-2020

➤ In December 2019, the college introduced the students to the Smart India Hackathon-2020. In this 5 teams were supposed to be selected in software and hardware category respectively from each college. It was an attempt by the college to introduce students to engage in the field of developing and innovation. Students came forward and made this initiative a success by their enthusiast participation. Team Error-404 was among the 5 teams that qualified the internals held in ABES-EC and went for the ppt round. Out of these 5 teams only Error-404 qualified ppt round and went for the nationals of SIH-2020 to represent the college in the software category. The finals were postponed due to the outbreak of Covid-19 and for the first time it was decided to be organized virtually between 1-3rd of August 2020. The competition begin with a 2-day hackathon, while on the first day participants needed to develop a prototype and undergo mentoring and evaluation rounds and on the second day, they have to present their presentation with their product developed in the 48 hours. The judges not only asked questions related to the project but also about the market, the technologies and its ability to stand out. Their idea was selected for the smart innovation category under Smart Vehicles. Despite distance being an obstacle, Error-404 competed against 21 teams from all over India. They even had to face an extra round i.e. "The Power judging round" after which six teams were shortlisted out of 21. On 5th August 2020, the team Error-404 was announced the winners of the finals. Finally all their hard work paid off. And Bravo they won.

Date: 5th August 2020

Freshers' 2019

➤ Freshers' Party organized by second year students for first year. The program had numerous events, where students showcased their cultural skills. The party ended with Mr. Fresher and Ms. Fresher awarding ceremony.

AKTU eBootathon4

➢ AKTU in collaboration with IIT Kanpur has taken an initiative towards giving an online platform for labs. Bootathon is an online contest for students in which more than 1000 participants participated. Shivani Rawat, Geetanjali Sharma, Shivam Motla and Shreyansh Sahai from 2nd year, CE branch with their mentor Ms. Lopamudra Mohanty ABESEC participated in AKTU and got **Gold Developer Certificate** for making three simulators of Python Programming Virtual Lab.

Date: 4th September 2020-16th September 2020

CodeX

Launching of CodeX Community under the edges of ABESEC ACM Student Chapter

➢ An open community where whole CS Department is there of every year from juniors to seniors. With one aim is to help other students in coding, development by sharing resources, doing webinars, conducting events, live discussion & mentorship from Officials.

➢ Our Ultimate goal is to build an open system where whole CS department is a member of this community.

Date: 28th November 2020

AKTU Fest Zonal

➢ "Acting is a way to express ourselves" - Not everyone can portray and live different roles. With sheer talent and utmost dedication, two students- Aastha and Gaurav of CS department were selected to represent our college in the event Nukkad Natak of AKTU zonal.

Students Achievement:

➢ Aastha Gupta, Computer Engineering 2nd Year Qualified first 2 rounds of Adode Internship.

Aastha Gupta, Computer Engineering 2nd Year

Department of Computer Science

Department of Computer Science

ABES Engineering College

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Department of Computer Science