2017-18, Issue 2 January-June (2018)

Department of Computer Science & Engineering

VISTARA
"The Connecting Dots"

ABES Engineering College, Ghaziabad
(Session: 2017-18)

Website: www.abes.ac.in

Table of Content

Department of Computer Science & Engineering, ABES-EC, GZB.

Message from Director's Desk

Dear Readers,

"Education is not preparation for life. Education is life itself." It is my pleasure & great privilege to present to you the information bulletin cum magazine of the Computer Science and Engineering department. For both individuals and nation, technical education is vital for technology development, either as away of developing human capacity that would aid in industrialization and
environment protection or personnel empowerment. A common belief is that education's purpose is to replace an empty mind with an open one. Let's go a little beyond and find out what exactly education meant in the past and how, over the decades it has fundamentally altered the present education in our country.

In this bulletin, one can find all the information about Computer Science and Engineering department as well as the recent activity of Computer Science and Engineering department in academic and research. Finally, I wish all the best to all students, staff and faculty members of the department.

Sincerely,
Prof. (Dr.) Gajendra Singh
Director, ABESEC

Department of Computer Science & Engineering, ABES-EC, GZB.

Message from HOD's Desk

Dear Readers,

Computer Science deals with the theory and methods of processing information in digital computers, but when we add engineering to it then it deals with design and build of computer hardware and software, and the applications of computers in science, business and arts. The department is providing learning based state-of-the-art education in computer science with its clear vision and mission since its inception. We have ICT equipped lecture halls and laboratories with latest hardware and software facilities

Computer Science & Engineering Department is a NBA accredited department. Now a day's globalization of academic and applied research is growing with speedy pace. Computer Science & Engineering stream has several heating areas with lot of thrust. Currently our education system is not in its best shape and will require lot of efforts to improve it. The main challenge for technical institute is to make a balance between curriculum delivery and value-addition. Technical education needs collaboration with industries so that we can bridge the gap between academia and industries.

This need lot of support from industries. We have already started some initiatives that offers joint program in different domains. Such initiatives bring critical changes in technical education and enhance practical knowledge, information about latest technical and industry trends. We have to inculcate value-addition courses with curriculum that deliver the current technical needs of the industries and students become industry ready.

A technical skilled engineer can also think about entrepreneurship initiatives. Our department is doing lot of efforts to bridge the gap between academia-industry.

Message from Editorial Team

The magazine Vistara is an idea behind which a dream and an aspiration is bounded. A dream seen by a student who had faced lack of information in past few years in his college life.
This will provide a platform to the talented one's and will aware the student as well as personnel who is part of ABES-EC Family.
Our theme line says a lot "connecting dots". Everyone has certain passion which should be grown but the thing we face is misleading from our aim or in my words "dots". So we are here to connect these dots.

Editorial Team

Janauary-2018 (08 and 12 January 2018)

Workshop on Data Science and Big Data Analytics

One-Week Faculty Development Programme on "Data Science and Big Data Analytics" in collaboration with ICT Academy- A Govt. of India Initiative and DELL-EMC was organized at ABES Engineering college from 8-12 January, 2017. This programme was a combination of theory & laboratory experiments. This FDP aims to provide opportunities to faculty members to enrich their technical knowledge in the field of Data Science and Big Data. This Workshop provides comprehensive coverage in basic and advanced analytic methods and an introduction to big data analytics technology and tools, including Map Reduce and Hadoop. In the this workshop, there is Hands on experience of the data analytics using the R Programming and java. On the Ubuntu operating system.

The Complete workshop was divided into 7 modules
Module 1: Introduction and course agenda
Module 2: Introduction to Big Data Analytics
Module 3: Data Analytics Lifecycle
Module 4: Review of Basic Data Analytic Methods using R
Module 5: Advanced Analytics – Theory and Methods
Module 6: Advanced Analytics – Technologies and Tools
Module 7: The Endgame, or putting it all together.

Speaker Details:

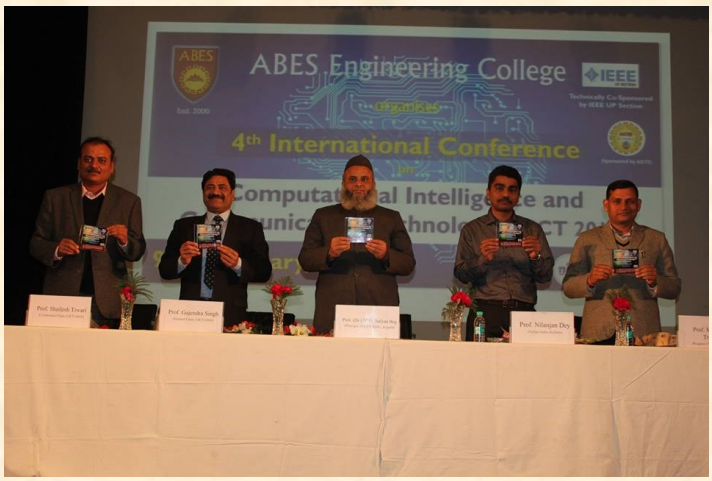
Mr. M.P. Jegadeesan ,(Training Manager – North) from Training and Development ICT Academy

Participants Details:

Participants are Faculty members from esteemed institutions of Delhi-NCR, Meerut in U.P. and also from Haryana. There were total 43 participants (15 from Deptt. Of CSE/IT/MCA of ABES EC and 28 from other institutes)

Febuary-2018 (09 and 10 February 2018)

Fourth IEEE International Conference on Computational Intelligence and Communication Technology CICT 2018 (Sponsored by AICTE)



The CICT-2018 is a major multidisciplinary conference organized to provide a forum for researchers, educators, engineers and government officials involved in the general areas of Computational intelligence and Communication Technology to disseminate their latest research results and exchange views on the future research directions of these fields, to exchange computer science and integrate of its practice, application of the academic ideas, improve the academic depth of computer science and its application, provide an international communication platform for educational technology and scientific research for the universities and engineering field experts, professionals. The following were the key areas that were of the conference were data mining; Internet; genetic algorithms; security of data; learning (artificial intelligence); medical image processing; micro strip antennas; antenna radiation patterns; Internet of Things. More than 200 papers have been submitted which are from 13 different countries like china, Canada, Russia, Spain, Taiwan etc. and more than 550 authors and out of them 200 submitted papers , 43 high quality papers have been selected for inclusion in proceedings in IEEE Explore. The Acceptance rate of the conference is 22.9.1. Only very high quality 43 papers have been accepted for publication and proceedings of conference.

Glimpse of Conference : In the inaugural ceremony, Prof. (Dr.) Shailesh Tiwari, HOD CSE Dept. gave a warm welcome to keynote speaker Prof. M.M. Sufiyan Beg, principal, ZHCET, AMU, Aligarh graced the event and talked about search engine optimization.

Dr. Nilanjan dey from Techno India, Kolkata showed his work on Medical image Analysis and Ms. Sangeeta Garg from TCS told about database research areas and key factors.

Participants Details: Entire CSE department and delegates from India as well as

Febuary-2018 (16 February 2018)

Codechef Orientation Session—Importance of Competitive coding in programming career

This orientation session is a 2 hour interactive session with the students on Competitive programming. In this session, Anup Kalbalia, Lead at CodeChef, told the students about the various stories/experiences from the world of competitive programming and help students understand the importance of the subject of Data Structures and Algorithms in their programming careers. He also shared some of the best practices in the coding culture which are emerging globally and in India.

Speaker Details:

Anup Kalbalia is a Sr. Tech Lead at Directi and leads CodeChef. He has more than a decade of experience in building software products and has done an MS in Software Systems from BITS Pilani.

Participants Details:

The students of CSE/IT II year and III Year have participated in the interactive session.

Coordinator: Mr. Gaurav Kansal

March-2018 (14 March 2018)

Workshop on Cyber Security Awareness programme organized by Innovative ideas infotech society in Association with AKTU and UP Police

CSE Department has organized one day workshop on Cyber security on 14 March 2018. The workshop highlighted the perspective the importance of the security issues in the cyber world. Not only the issues were addressed the students were als made aware of the solutions or precautions they have to take while they are working on the systems and mobile phones with internet connectivity on them. These all issues were highlighted to the students with live demo of the problem along with the effective solution to the problem. As cyber security has proved to challenging problem and need the expertize to handle high ends level of frauds and crimes so the scope for job opportunities and skill required to attained was also discussed with the students.

Speaker Details:

The Resource person of this workshop was Mr. Rahul Mishra . He is Security Adviser U.P Police & Cyber Consultant Innovative Ideas Lucknow U.P. The workshop was coordinated by Dr. Gaurav Dubey (Prof. CSE Department).

April 2018 (9 April 2018)

Agile Workshop from Poorav Consulting International

One day Agile Scrum workshop for the students of ABES on 9th April 2018. This course guided the students to be ready and prepare for the Jobs they are looking for also will help in personal agility to focus on outcomes as today in most of the corporates and IT industry. Agile is used as a medium to improve time to market and reduce cycle time.

Speaker Details:

Gaurav rastogi is an IT professional for 16 years and have worked in Transportation, Reatil & e-Commerce, Investment Banking clients across United states, UK and Asia. He is been a SCRUM Master and a Process Anchor for SCRUM for multiple projects. Has working exposure to Distributed SCRUM, Scailling SCRUM for Organizations.

The Coordinator of this event was Dr. Gaurav Dubey.

POSTER AND PROJECT PRESENTATION (13 APRIL, 2017)

The exhibition show was extremely successful with full day visit of faculty and student of different years and departments for technical sharing and discussions .

We convey our sincere thanks to our esteemed external panel

Dr. Archna Singh mam, faculty, Amity Univ. Noida

Sh. Kuldeep Tanwar Sir, Sr. Program Manager, Royal Bank of Scottland, Gurugram

Sh. Mayank Gupta ji, IT Analyst, TCS Noida

We extend our thanks to our central for all permissions and resources along with infrastructure, HoD– AS and HoD-ME for permitting their use of resources and manpower , CA department for their help

And
We are grateful to our all 3 CSE professors (including HoD, CSE) for their continuous back support , evaluation, policy and process making of the event and motivational words, senior colleagues for their valuable time for evaluation and faculty for their kind gestures to guide and motivate students for participation.

The team efforts of CSE. Dept made the activities fruitful for students.
Final year students specially mentioned the Project outcomes and learning in their Posters which will be useful in NBA process proposed for us next year.

It was grand and overwhelming show !!
Thanks to All Final year students for their hardwork and attitude to excel.


WordsPoint: 10,000 times faster dictionary
Abstract
Implementation
Limitations
Recommendations
Project Learning
Project Outcomes
Conclusion


COMPUTER AIDED MACHINE DRAWING-II
ABES

All projects were good but on the Feedback of External Evaluators ,
Dept of CSE appreciated 4 of them.

A

Project Guide - Abhishek Gaur
Team - Ms. Krateka , Ms. Aparna, Mr. Neeraj CSE8D
Project Title - Prevention of air pollution by predicting the number of plants.

B

Project Guide - Ms. Rashmi Mishra
Team - Mr. Himanshu Yadav, Mr. Gaurav Raj, Mr. Mayank Saxena CSE8B
Project Title - ABES CONNECT

C

Project Guide - Mr. Anurag Singh Waliya
Team - Mr. Apoorva Saran, Mr. Abhinav Sharma, Mr. Arpit Gupta CSE8A
Project Title - Activity detection using deep learning

D

Project Guide - Mr. Veerendra Yadav
Team - Mr. Anurag Kumar Sen CSE8A
Project Title - Emerging cyber threats in India and mitigation techniques.

Mr. Rohit Rastogi(Associate Professor, CSE) was Organizer and Coordinator of the event.

May 2018 (22 May 2018)

Prize distribution Ceremony of Technovation Club

Technovation is the technical club of Computer Science Department, ABES Engineering College. It was formed in 2010 with a vision to provide a platform for students to present their technical skills. With time it has emerged into a fully operational group having a team of 50+ students having expertise in various fields. Technovation organised various events and annual technical event vertigo. To maintain the sprit of competition and interest of the students in such activities it is necessary to recognize the students on the platform. The main objective these events is imbibe knowledge and can start a deep thinking process and move toward developing solution to the real life problems.

June 2018 (27-28 June 2018)

Workshop on Automatic Speech Recognition

The workshop was technically sponsored by IEEE ABES student branch and Acoustical Society of India. was inaugurated today on 27th June by eminent scientists of the field, Prof. VR Singh, President, Acoustical Society of India, Director, PDM EI, New Delhi-NCR and Dr. Mahavir Singh, General Secretary, Acoustical Society of India, Acoustics, Ultrasonics & Vibration (AUV) Section, CSIR-National Physical Laboratory, along with Director ABESEC Prof. Gazendra Singh, CSE Professors Dr. H.O. Upadhyay and Prof. Gaurav Dubey and other CSE faculty members.

The Objective of the Workshop are to:

- Exchange ideas, methodologies and techniques of how to work towards the implementation of Continuous speech recognition systems.
- Review existing Automatic speech recognition(ASR) systems.
- Be informed of the benefits and limitations of the existing ASR systems.
- Identify and recommend appropriate actions required for further research in this field.

The two chief guests also presented the keynote address on the topic.

Dr. VR Singh spoke on Topic--'Recent Speech Recognition Techniques and Devices for U-Health Care' :

He Told that The treatment of speech signal processing requires an initial grounding in digital signal processing. On one side of the spectrum is the speech and language sciences, such as linguistics, phonetics and psychoacoustics, and on the other side are the signal processing theory and pattern recognition and artificial intelligence.

Dr. Mahavir Singh spoke on Ambient Noise: Source, Monitoring and Control:

He told about the ASR Noise issues and how this leads to enhanced human-human

& human-machine communication systems, such as speech and audio coding, automatic speech and speaker recognition, speech synthesis, speech enhancement etc. Pursuit of such wide ranging research and development demands a broad base of fundamental knowledge, as well as the mastering of clever algorithms and techniques.

Two Hands on sessions were delivered by the trainer of the workshop.

HTK 3.4.1 on 27th June

The Hidden Markov Model Toolkit (HTK 3.4.1) is a speech recognition toolkit developed by Cambridge University (CUED). The tools provide sophisticated facilities for speech analysis, HMM training, testing and result analysis.

CMU Sphinx on 28th June

CMU Sphinx describe a group of speech recognition systems developed at CMU. These include a series of speech recognizers (Sphinx 2-4) and an acoustic model trainer (SphinxTrain).

Resource Person:

The trainer Mr. Ankit Kumar, Asst. professor, CSE @ ABESEC told the importance of workshop that Speech Processing is a scientific discipline as well as a technology frontier with immense applications.

Participants of the workshop:

22 participants including faculty and students from all over the country from different and distant places are participating in same. 2 candidates Specially from Nepal, 1 from Andhra Pradesh and 1 from Kanpur, 1 from Rampur and others from NCR places joined same. Students and faculty, both are taking active participation in the workshop.

Mr. Rohit Rastogi(Associate Professor, CSE) was the Organizer and Coordinator of the event.

June 2018 (4th June — 7th July)

Summer Training Using E Box (Data Structure, Java, Advance DBMS)

E-Box is a Technology Enabled Active Learning and Assessment platform for technology and engineering domains.Apart from the basic LMS components like quizzes, assignments, lesson components, resource components etc, it has numerous activity components pertaining to technology and engineering concepts that could be used for design and analysis oriented learning. These components are also used for assessing the design and analysis skills of candidates, apart from the regular knowledge level testing. It is self learning tool that has help the students to basic concepts to advance and after the completion of the course student are capable of getting deep insight of the core subject. The training was provided to the students in three main areas Data structures, Java and Advance DBMS.

The major topic that has covered in FDP:

1. Data Structures

Problem Solving Models and Programming, Problems for Logical Thinking, Problems for Critical Thinking and Reasoning, Concepts of Data Structures and Storage Structures, Programming the Data Structures, Choosing appropriate data structures based on problem context, Algorithm Analysis, Problems on Algorithmic Thinking and Strategizing, Choosing and Applying optimal Algorithmic Strategies for Complex Problem Solving and Exercises for Optimal and Efficient Coding

2. Java

Structured Programming, Classes and Objects, Collections, OOPS, Threading, Exception Handling & Strings, JDBC, DDL , DML, Date, Time, String and Set Operations.

3. Advance DBMS

Resource Person: Anurag Walia, Anand Shrivastava, Abhishek goyal , Gopal Gupta , Amrita Jyoti, Puneet Goel,Akansha Gautam,Akhilesh Srivastava,Gaurav Dubey, Nidhi singh, Anmol jain, Prabhat Singh, Birender Kumar and Ekta Garg.

Participants Details:

Students of Second Year and Third Year.

June 2018 (5th June — 31st July)

Java Training by NASSCOM– Aricent

Department of Computer Science & Engineering at ABES Engineering College was one of the selected one. Aricent conducted a test for short listing the students, and 65 students qualified the test for taking participation in training.

The training course includes technical and non technical courses. It includes Core and Advance Java with complete project guidance following SDLC, aptitude, safety and health and soft skills and communication skills. The complete duration of this training is 300 hrs, which took two months to complete.

The first phase of the training was scheduled from June 5, 2018 to July 31, 2018

The trainers from industry Mr. Manoj Kulkarni and Ms. Lata Verma, having rich experience ,trained our students on Java technologies. Ms. Punita trained our student on soft skills.

The overall program was coordinated under the supervision of Dr. Shailesh Tiwari, Head and Professor, Department of Computer Science & Engineering and program co-ordinated by Mr. Anmol Jain, Associate Prof., Department of Computer Science & Engineering.

Trainer Details:

Mr. Manoj Kulkarni from Centum Learning

Ms. Lata Verma from Centum Learning

Participants Details:

92 Students of Final Year Computer Science and Engineering Department.

Total no. of Students:-92

JOURNALS PUBLISHED

[1] N. Kumar, S. Tiwari, Z. Zheng, K. K. Mishra, and A. K. Sangaiah, "An efficient and provably secure time-limited key management scheme for outsourced data," *Concurr. Comput. Pract. Exp.*, vol. 30, no. 15, pp. 4498, 2018.

[2] S. K. Srivastava, S. K. Singh, and J. S. Suri, "Healthcare Text Classification System and its Performance Evaluation: A Source of Better Intelligence by Characterizing Healthcare Text," *J. Med. Syst.*, vol. 42, no. 5, pp. 97, May 2018.

[3] M. C. Trivedi, V. K. Yadav, and A. K. Gupta, "A Proposed DDS Enabled Model for Data Warehouses with Real Time Updates," *Int. J. Informatics Commun. Technol.*, vol. 7, no. 1, pp. 31–38, 2018.

[4] RohitRastogi, DK Chaturvedi,Navneet Arora, Piyush Trivedi, Pankhuri Singh(2017). 'Role and efficacy of Positive Thinking on Stress Management and Creative Problem Solving for Adolescents', *International Journal of Computational Intelligence, Biotechnology and Biochemical Engineering*, 5-27 pages, in Vol 2, No 2 (2017) issue.Published in Vol 2, No 2 (2017) 821-880-PB.

[5] Rastogi, R., Chaturvedi, D., Sharma, S., Bansal, A., & Agrawal, A. (2017), 'Audio Visual EMG & GSR Biofeedback Analysis for Effect of Spiritual Techniques on Human Behaviour and Psychic Challenges', *Journal Of Applied Information Science*, 9(6), 7^{1}-46. Impact Factor: 4.002, Indexed In EBSCO, Ulrich's Web, Cabell's Directory & Proquest.

BOOKS PUBLISHED/ BOOKS CHAPTER / BOOKS EDITED

- Rohit Rastogi , “Framework for Use of Machine Intelligence on Clinical Psychology to study the effects of Spiritual tools on Human Behavior and Psychic Challenge ”, published in “IGL global , USA ”
- Virendra Kumar Yadav, “"MEDJACK: Latest Trends and Counter Measures ” , published in “Information Security in Biomedical Signal Processing, published in “IGL global , USA ”
- S. Kumar, Distributed Systems: Design Concepts. 2017.

FDP ATTENDED

- Mr. Anmol Jain, Associate Professor (C.S.E) attended a FDP on AGAIS held at KCC Institute of Tech & Mgmt,Greater Noida , during 29th– 2nd January.
- Mr. Anmol Jain, Associate Professor(CSE) attended a FDP on Machine Learning held at ABES-EC during 12th-16th march.
- Mr. Amit Aggarwal, Assistant Professor CSE) attended a FDP on Machine Learning held at ABES-EC during 12th-16th march.
- Mr. Amrita Jyoti ,Associate Professor(CSE) attended a FDP on Machine Learning held at ABES-EC during 12th-16th march.
- Rohit Rastogi ,Associate Professor attended a FDP on Automatic Speech Recognition held at ABES-EC during 27th-28th January.
- Ekta Garg ,Assistant Professor attended a FDP on Data Science and Big Data Analytics held at ABES-EC during 8th-12th January.
- Mayank Bhushan ,Assistant Professor attended a FDP on Data Science and Big Data Analytics held at ABES-EC during 8th-12th January.
- Nupur Chauhan ,Assistant Professor attended a FDP on Natural Language Processing held at ABES-EC during 19th-23rd February.
- Sonal Gupta ,Assistant Professor attended a FDP on Machine Learning held at ABES-EC during 12th-16th March.
- Pooja Saharan ,Assistant Professor attended a FDP on Machine Learning held at ABES-EC during 12th-16th March.

- Pooja Saharan ,Assistant Professor attended a FDP on Outcome Based Education and Accreditation held at ABES-EC during 15th-19th January.
- Pooja Saharan ,Assistant Professor attended a FDP on Business Intelligence and Artificial Intelligence held at ABES-EC during 9th January.
- Akhilesh Kumar Srivastava ,Associate Professor attended a FDP on Natural Language Processing held at ABES-EC during 19th-23rd February.
- Abhishek Sharma ,Assistant Professor attended a FDP on Natural Language Processing held at ABES-EC during 19th-23rd February.
- Abhishek Sharma ,Assistant Professor attended a FDP on Image and Video Analytics held at ABES-EC during 29th March.
- Rashmi Mishra ,Assistant Professor attended a FDP on Data Science and Big Analytics held at ABES-EC during 8th-12th January.
- Anand Kumar Srivastava ,Assistant Professor attended a FDP on Data Science and Big Analytics held at ABES-EC during 8th-12th January.
- Gopal Gupta ,Assistant Professor attended a FDP on Data Science and Big Analytics held at ABES-EC during 8th-12th January.
- Gopal Gupta ,Assistant Professor attended a FDP on Outcome Based Education and Accreditation held at ABES-EC during 15th-19th January.
- Anand Kumar Srivastava ,Assistant Professor attended a FDP on

PAPER PRESENTED/ PUBLISHED IN INTERNATIOAL CONFERENCE PROCEEDINGS

- Gunjan Raghav and Harsh Khatter , "Intelligent Curation System for Blood Infections using Fuzzy Inference System in Android " at "IEEE CICT "ABES Engineering College Ghaziabad, 2-Feb 2018.

- Pooja Dixit, Avadhesh Kumar Gupta, Munesh Chandra Trivedi, Virendra Kumar Yadav, "Traditional and Hybrid Encryption Techniques: A Survey " at conference on "Networking Communication and Data Knowledge Engineering " 3– March 2018.

- Rastogi R., Chaturvedi D.K**.,** Arora N., Trivedi P., Chauhan S., 'Framework for Use of Machine Intelligence on Clinical Psychology to study the effects of Spiritual tools on Human Behavior and Psychic Challenges',*Proceedings of NSC-2017(National system conference)IEEE Sponsored conf. of Dayalbagh Educational Institute,Agra, Dec. 1-3, 2017.*

- Rastogi R., Chaturvedi D.K**.,**Satya S., Arora N., Bansal I., Yadav V., 'Intelligent Analysis for Detection of Complex Human Personality by Clinical Reliable Psychological Surveys on Various Indicators', in *the national Conference on 3rd Multi Disciplinary National Conference Pre-Doctoral Research [MDNCPDR-2018] at DayalbaghEducational Institute, Dayalbagh, Agra On 06-07 September, 2018.*

Blockchain
The Most Promising Technology

Blockchain is the most hyped and demanding technology today, globally. If we discuss someone about it, eight out of ten will say that they are working on it or they are learning about it.
Just like everyone knows about Database, Internet, 5G; Blockchain is the next technology to be added in your vocabulary.
Till now wherever is a transaction, there is a database to store it. Every company has its own database managed by a person called database administrator.
A paradigm shift is coming in our lives where people earlier talked "It's available in the database" now they will say "It's available in the Blockchain".
Some people think that is a kind of database, that is also true, but with big difference. So what exactly Blockchain is,

- A cryptography based, secured, distributed database; stored on different machines at the same time called as P2P network.
- It is mainly used to store transactions happening on the pear networks, added into blocks using special piece of code called as smart contract or chain code written using some programming language like Java, Solidity, Go etc.
- These transactions get added into blocks, then the blocks are added to the network called the chain using special system oriented technologies called consensus which can be proof of concept, proof of stack etc.
- Once the block is added to distributed database on one pear, it get automatically updated on other pears using special software called Blockchain Protocol.
- Once the transaction is added to the network it is immutable. It can neither be modified nor deleted.

Blockchain can be of three types

- Public Blockchain – accessible to anyone to maintain single public ledger e.g. Ethereum
- Private Blockchain – accessible to specific people in a group e.g.

- Federated Blockchain – accessible to specific companies in a group e.g. Corda R3

Blockchain Technology offers a new set of features

- Single public ledger
- Transparency
- Immutability
- High Security
- No middleman
- Lower transaction cost

Usage of Blockchain

Wherever is a transaction, there is a Blockchain. So Blockchain can be used for any use case e.g. to manage land records, education records, banking transactions, digital identity, intellectual property rights, medical records, insurance records, supply chain etc.

Blockchain is one of four most promising technologies changing the world.

- **IoT** senses
- **Blockchain** Remembers
- **AI** thinks
- **Cybersecurity** protects

Prof.(Dr.) Bhuvneshwar Prasad Shama
Professor in Business Administration, ABES –EC
Founder and CEO, Open Blockchain Alliance

Computer Vision - The latest trends

Media in the form of images, videos, animations and Gifs have become an important part of our internet activities. Lately, these media formats have found their place in text messages and various other forms of information sharing mediums such as tweets on twitter, facebook posts etc. Today, internet consumers have taken the phrase 'A picture is worth a thousand words' quite literally. This new trend presents its own opportunities and challenges. More and more of today's internet users (mostly younger generation) are using images and animations to communicate to their peers than text messages. Everyday millions of images are posted online via Twitter, Facebook, Tumblr and Instagram. While the consumers are sharing so much of information to the open world the benefits of this particular information is depending upon the knowledge that can be mined from it. Various parties other than the consumers stand to benefit from this information if they could understand it, more precisely write applications that understands and derives meaning from the media formats. These parties could be corporations offering some product or services to the general public and need to monitor consumer response or maybe they could be government entities trying to stipulate citizen feedback for its policies. All the ways this information can be used, strengthens the need of tools and techniques to understand the images and videos like we as humans do. These techniques come under the umbrella of the domain called "Computer Vision". In this article few of the use cases will be presented along with answer to the question - What is the future of Computer Vision going to be.

Computer Vision is the field of study where the goal is to extract knowledge from images. In Computer Vision (casually referred as CV) tools and techniques are developed to mine perceptive knowledge from images and video frames. These techniques turns out to be very challenging because of various reasons. As humans our vision system is quite impeccable and most of what it can accomplish is involuntary but trying to program our computer to do this is close to impossible. So to automate these vision tasks require learning based techniques where the system learns how to extract knowledge from given data.

Today's vision systems are capable of accomplishing results difficult even for a human Brain such as Object Recognition in noisy Images and videos, Natural Language Translation from complex language such as Mandarin and cantonese. Understanding speech and images have become easier than before and computationally economical so that even our cell phones can do it with ease. All these amazing Visual achievements by our computer systems are only possible with the development of CV algorithms and DEEP NEURAL NETWORKS had a vital role to play. The annual ImageNet Challenge - ImageNet Large Scale Visual Recognition Challenge (ILSVRC) is a competition where research teams evaluate their algorithms on the given data set, and compete to achieve higher accuracy on several visual recognition tasks.Wikipedia As of 2017 teams have achieved less than 5 % incorrect in the image recognition datasets. Which means almost as good as human visual system maybe even better. A majority of the teams successful in this competition used Deep Neural Networks in their implementation. In recent years it has been proven many times Deep Neural Nets as CNN's (Convolutional Neural Networks) and RNN's (Recurrent Neural Networks) perform really well at Image recognition and visual perception tasks such Object identification and tracking in video, face detection and Gait analysis etc. Various companies have already integrated their applications with these deep learning algorithms and offered us services we use daily such as Facebook face tagging, friend suggestion, Amazon product suggestion, Amazon user review analysis.

Deep Learning is a machine learning technique that allows computers to learn by example. It has been used by many researchers to accomplish complex visual tasks and with the popularisation of GPU's the cost to do so have gone down.

The future of Computer Vision is with Deep Learning. To achieve better results and execute complex tasks better Network architectures for Deep Neural Nets are being developed along with better algorithms improving the results and reducing the computation cost.

ANURAG WALIYA
ASST. PROFESSOR