JANUARY – JUNE | 2019 EDITION

# SAGAR INSTITUTE OF RESEARCH & TECHNOLOGY, BHOPAL

One of the biggest consumer electronics trends of 2019 has been extended reality or XR. 2020 is likely to bring more extended reality concepts and technology. Virtual and augmented reality video games have seen some huge developments in the past year, with many popular games including elements of VR or AR.

The announcement of the next generation of gaming consoles will no doubt lead to more games of this ilk being developed to complement more powerful hardware.

**DEPARTMENT OF ELECTRONICS & COMMUNICATION**

## EDITORIAL BOARD:


- Advisor: Dr. Manish Manoria
- Editor: Dr. Jyoti Jain
- Coordinator: Prof. Shalini Sahay
- Students Coordinators:
  Minali Gupta
  Samanta Kshrigar
  Rishabh Singh
  Abhishek Gupta


## NEW TRENDS IN ELECTRONICS

Reinforcement learning and new architectures of neural networks will revolutionize prediction

The key idea of the neural networks is to create millions of active interconnections within computer brains to provide it with multiple opportunities to perform tasks and learn from them. A primary neural network usually consists of millions of artificial neurons. They proved to learn from image, text, audio data very efficiently.

JANUARY - JUNE | 2019 EDITION

# DEPARTMENT'S VISION

To motivate and mould students into world class professionals who will excel in the field of Electronics & Communication Engineering and effectively meet challenges of the dynamic global scenario.

# DEPARTMENT'S MISSION

- To achieve academic excellence in providing technical education by incorporating the principles of Total Quality Management (TQM).
- To provide state-of-art infrastructure for enhanced learning & research with IT based knowledge management to meet global challenges.
- To inculcate ethical, moral, & cultural values among Electronics & Communication Engineering professionals.

## FROM HOD'S DESK....

It gives me immense pleasure to note that another edition of Bits & Bytes is ready for launch. Truly, irrespective of class or cadre or caliber, it is the dynamism and pervasiveness of the vision that can lead to sustainable excellence.The big theme today is to focus on creativity and innovation alongside academics. Entrepreneurial wealth creation has been explosive on account of the massive impact made by technology start-ups. It is research and development that fosters innovation and out of the box thinking, be it in design or in implementation.

APPLY YOUR MIND IN EVERYTHING YOU DO, WHETHER IT IS A SMALL LABORATORY PROJECT OR A LONGER SEMESTER PROJECT. UNDERSTAND THE "WHY", INVESTIGATE THE "WHY NOT" AND THINK THROUGH THE "HOW ELSE" AND YOU WOULD ALREADY HAVE BECOME AN INVENTOR OR PIONEER. BLEND SOME STREET SMART BUSINESS SENSE TO THE WHOLE THING AND YOU WOULD HAVE TRANSCENDED TO AN ENTREPRENEUR!!! WEALTH CREATION IS MEANINGLESS UNLESS IT HERALDS PROSPERITY FOR POSTERITY. THAT WARRANTS ETHICAL RESPONSES FROM ALL STAKEHOLDERS. THAT ALSO DEMANDS AN ASPIRATION TO SEE FROM A LARGER CANVAS AND FOR A LONGER HORIZON. OR IN OTHER WORDS, FLAVOUR YOUR BUSINESS OFFERING WITH A SENSE OF ETHICS AND GENERATIONS WILL CALL YOU A VISIONARY!!!
NURTURE THE VISIONARY IN YOU!!! THIS IS A COMMON DREAM!!!

Best Wishes!

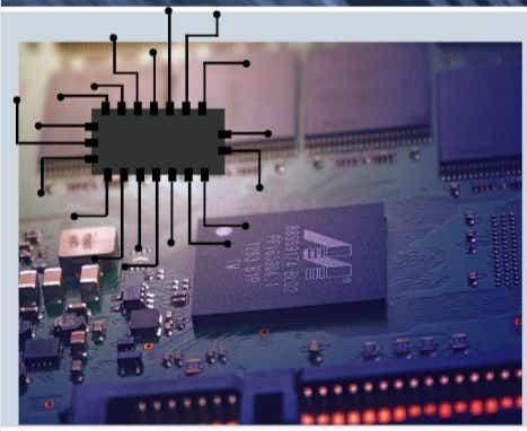
Dr. Jyoti Jain
HOD, EC
SIRT, Bhopal

# Personalization with result in the rise of adaptive devices

Actually we are the witnesses of the immense evolution of AI-powered chatbot technology. Starting with simple routine tasks, chatbots are now actively turning into AI assistants. Customers got used to them very fasts and now cannot even imagine dealing with some issues without AI assistance.
Moreover, personalization will be represented not only due to the purposeful user commands for different devices but also in the devices themselves. Thus, they will be able to adapt themselves to the individual needs of the owner after a certain period, even without any commands on his part. This technology has become rather sophisticated. Thus the majority of customers cannot even guess whether they communicate with a person or with a chatbot.

Due to the excellent operation of Apple's Siri, Amazon's Alexa, people started to rely more on AI assistants in daily routine. What is expected in 2019 is that even more advanced assistants will appear and take responsibility for more complex dealings. With the help of the improved speech recognition techniques, the AI assistance will get a chance to provide you with a far more personalized experience. Perhaps you will find yourself speaking, communicating, and giving tasks to your refrigerator or lamp, as well as letting your car build the best routes and drive you there shortly.

The key idea of the neural networks is to create millions of active interconnections within computer brains to provide it with multiple opportunities to perform tasks and learn from them. A primary neural network usually consists of millions of artificial neurons. They proved to learn from image, text, audio data very efficiently. It is expected that due to the new theory applying the principle of an information bottleneck the deep neural networks will forget noisy data, yet to preserve the information what this data represents. Thus, the neural networks become more and more alike to the neurons of human beings.

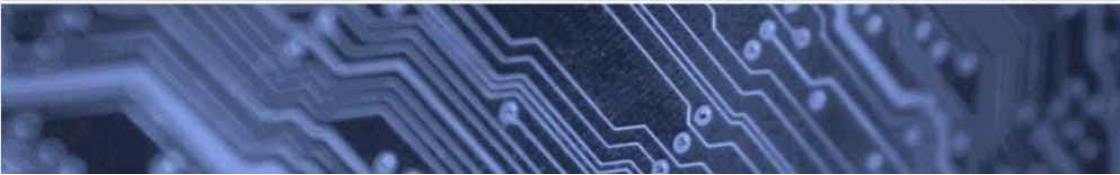


Most likely reinforcement learning will become one of the most significant trends in 2019. Due to the successes of DeepMind's, AlphaZero and OpenAI's Dota bot, a lot of companies are now actively investing in the development of reinforcement learning platforms. These platforms will considerably increase the opportunities of the companies. Moreover, there is a whole generation of data scientists who regard RL as a means to revolutionize prediction. Therefore the implementation of RL will find a vast amount of use cases in various industries.

Reinforcement learning (RL) in its turn is a form of neural network that usually learns from its environment with the help of observation, actions, and rewards. Reinforcement learning has not been widely applied in various industries due to the existence of some obstacles and complications. The following facts may explain it: RL involves more complex algorithms and less mature tools and requires accurate simulations of the real-world environment. However, the potential capabilities of RL proved to be enormous. It can easily solve traditional neural networks problems.

## REINFORCEMENT LEARNING

These are the three main problems: the absence of training data, the lack of training data, and the high cost of training data. These factors make reinforcement learning a good method for solving sequential decision-making problems that are common in game playing, financial markets, and robotics.



# PLACEMENT SPOTLIGHTS

Students placed in the companies or government sector:

ABHSHEK DESHMUKH-RED CARPET
ASHUTOSH KUMAR -COGNIZANT
PRACHI PATEL -TCS
ANUP MANEKAR-TCS
NEERAJ ASATI-TCS

## TOPPERS IN IV SEM:

0133EC171056- MOHIT KHANKRIYAL, 10
0133EC171081- RICHI JAIN, 10
0133EC183D16- SHIV KUMARI, 10

## TOPPERS IN VI SEM:

1. MAMTA SINGH, 9.44
2. PRITEE, 8.95
3. ANJALI BISHT, 8.88

# DEPARTMENT ACTIVITIES

## Yoga Day

## Education Fair

# Induction Programme

Presentation of the Department is given by HOD for the III Sem Students

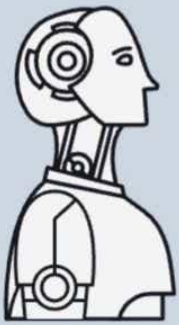
# Induction Programme

## Alumni Interaction

# Internship Programme

Two weeks Internship Program on Robotics by Texas Instruments, Banglore

# FACULTY ACHIEVEMENT:



- Dr. M. Fatima, Prof Shruti Dixit, Prof. Navneet Kaur attended FDP on Theory Coding and It's Application from 13 June to 18 June 2019.
- Dr Sangeeta Shukla attended 4 days Summer School in Information Theory, Signal Processing , Telecommunication and Networking from 25 June to 28 June 2019 in IIT MADRAS.