AI WORKSHOP REPORT

Workshop title: **Workshop on AI**

Date: **20-23 May, 2019**

Venue: **BBPS Training Centre**

Attended by: **Ms. Anjali Sharma ,Ms.Meetu Tripathi, Ms.Rani Vaid, Ms.Swati Chawla, Ms. Meenakshi Gulati, Ms.Asha Menon, Ms.Sonam, Ms.Alka Rai, Mr.Prabhat Mishra**

Resource person: Prof. M.M.Pant

The Resource Person, Professor MM Pant was introduced by Shri Suraj Prakash ji, who stressed on the need for SWADHYAY- Self Learning and CHINTAN- Discussion.

DETAILED REPORT
DAY I (20.05.2019, Monday)
Session I
Topic: The history and evolution of Artificial Intelligence

Prof. MM Pant is a Ph.D. in Computations Physics (IIT Roorkee) with a vast variety of experience .He has been a member on various committees of academic bodies like CBSE, NIOS, NCERT, UGC, ECE, NUEPA, NCTE.

Building on more than five decades of academic experience, he is now introducing new learning approaches as Learning 2221 and exhorting teachers to become Teacher-Preneurs. Professor Pant asked participants when should AI be started in schools. As various answers poured in, he suggested that the theory and practical knowledge of AI are like the two sides of a coin and need to be managed in a judicious manner. He explained that 'safety' is a big issue with AI as it has been with every invention, be it fire or electricity. There are dangers involved with the advent of AI but with the advancement in technology happening at an exponential pace in the recent times, we need to be well equipped to meet the challenges.

He gave a comprehensive historical background about the advancement of AI over the years. He addressed

>   Young kids --DIGITAL NATIVES
>   Middle aged people --DIGITAL MIGRANTS
>   Old people who resist technology -- DIGITAL REFUGEES

He quoted Dr. Andrew Ng, **'AI is the new electricity'**. As with all emerging technological trends, some elements of AI are hyped, while some are ahead of their times. Advancements in AI stand to benefit the energy sector but come with their own limitations and practical concerns.

Session 2

Topic: Machine Learning and Key Algorithms

Prof.M M Pant emphasized on various aspects of **Machine Learning : the key algorithms.**

Traditional programming was compared to Artificial Intelligence. Terms like Deep Learning, Face recognition, supervised - unsupervised learning were emphasized. He discussed about the evolution of AI and it's buzz. Various applications of AI-Computer Vision, Robotics, NLP, Expert systems, Planning and rescheduling, Learning, User modelling and Games were highlighted in the session.

- ❖ Megatrends in computer technology
- ❖ Valued skills in computer technology which include top 10 skills.
- ❖ Computational thinking as third aspect of Science, in the age of Artificial Intelligence
- ❖ Programming languages for AI
- ❖ Data collection- 3 Vs of Big data– Velocity, Variety and Volume
- ❖ Overfitting and under fitting of Data.

The session was concluded by discussion on videos of TED Talks based on AI teaching in classrooms.

DAY II (21.05.2019, Tuesday)

Session I

Topic: The CBSE curriculum for classes VIII & IX

Prof. M.M Pant started the session highlighting the importance of taking AI as a subject in classes 8th and 9th since in the next decade of this century, the world is going to change and this is the time when we need to get started. He explained that the CBSE curriculum focuses mainly on preparing student for AI which includes introducing the learners to the three domains of AI and by allowing them to construct meaning of AI through interactive participation and hands-on activities. One of the important aspect in this process was working on basics of python coding language. Professor Pant also elaborated that the syllabus was divided into five sections which are as follows.

1. Excite -To apply and reflect on the Human-Machine Interaction and to identify and interact with the three domains of AI- Data, Computer Vision and Natural Language Processing.
2. Relate -In which students will be able to relate to application of Artificial Intelligence in their daily lives.
3. Purpose -To understand the impact of Artificial Intelligence on Sustainable Development Goals to develop responsible citizenship.
4. Possibilities-To imagine, examine and reflect on the skills required for the futuristic opportunity and to develop effective communication and collaborative work skills.
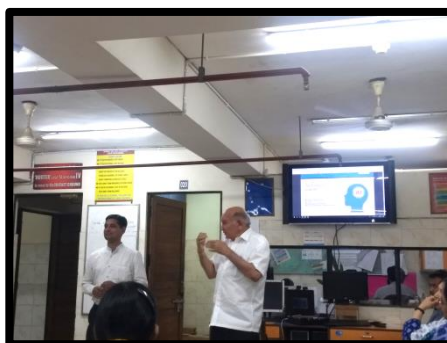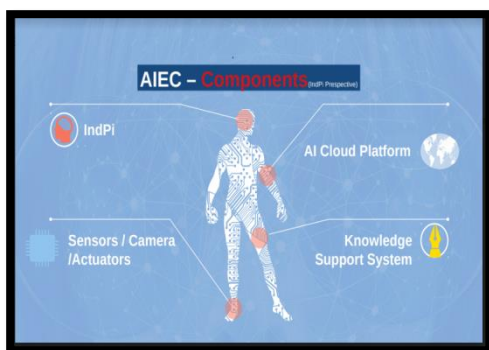
5. AI Ethics-To gain awareness around AI bias and AI access and to let the students analyze the advantages and disadvantages of Artificial Intelligence.

Apart from this he also discussed different games for students like Rock paper scissors, Mystery Animal, Quick Draw etc.

Session II

Topic: Setting up an AI Experience Centre

The second session was taken over by Mr. Manish who was an engineer with TCS and is currently working with a team to set up AI Experience Centre. He started with the brief introduction about AI Experience Centre(AIEC) and its components. The four main components required to set up an AICE were-IndPI, Sensors/Camera, Support System and AI Cloud Platform. IndPi tool contained some motion and visual sensors, Raspberry Pi, Motors and circuits. Mr.Manish showed the participants how the data was trained into it and one by one each participant was asked to check it. On correct recognition the motor connected to some dummy fan started rotating. It was an overwhelming experience to see a real life AI application. One more project -Chatbot was also shown to the participants. The two projects- Understanding the handwriting, Fake news Identification were also introduced which are in pipeline. He also encouraged the participants to use Cloud platform

to   develop

AI(https://cloud.com/ai-hub) applications.

Day III (22.05.2019, Wednesday)

Session I

Topic: Ethics and Artificial Intelligence

Prof. M.M Pant started the session highlighting the importance of Ethics in AI. Ethics can be defined as the moral principles that govern a person's behavior or the conducting of an activity. Prof. Pant also discussed the importance of AI and Ethics for school-aged students. The average age at which a child receives his/her first cell phone and makes and his /her presence on social media is also decreasing nowadays. So if students at an early stage develop an appreciation of ethical design then it will become 'second nature' to them as they grow into AI practitioners. Prof. Pant had shared few anecdotes of bias creeping into AI systems from many sources. An interesting source of bias can be the data collection process itself. And in the era of Smart devices, this can often happen because of the sensors deployed. For instance:

"An African-American guest of the Dragon Con sci-fi and fantasy convention visited a bathroom in the event's host hotel and discovered the soap dispenser, from a British company called Technical Concepts, wouldn't sense his hands. When his friend, a white man named Larry, tried after him, out came the soap". This was because of a tricky light sensor. High-quality, unbiased data combined with the right processes to ensure ethical behavior within a digital environment could significantly contribute to AI that can behave
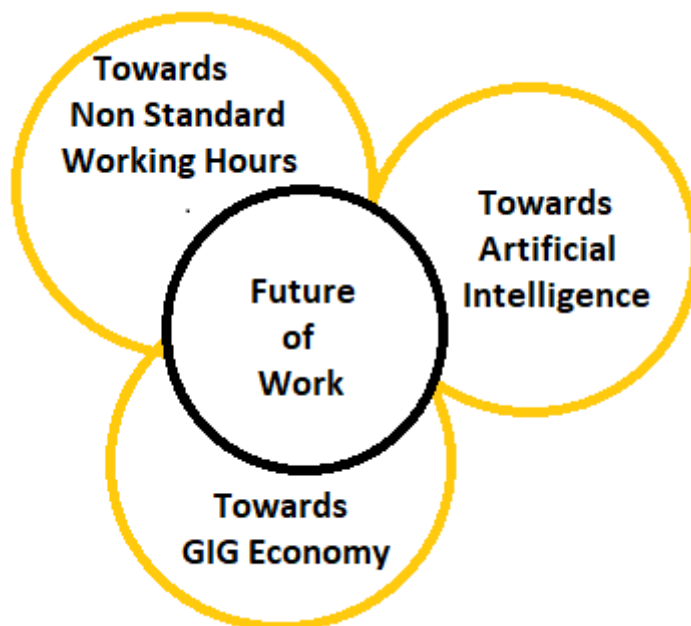
ethically. The objective is to create trustworthy AI that is lawful (respects all applicable laws and regulations), ethical (respects ethical principles and values) and is robust (from a technical and social perspective).

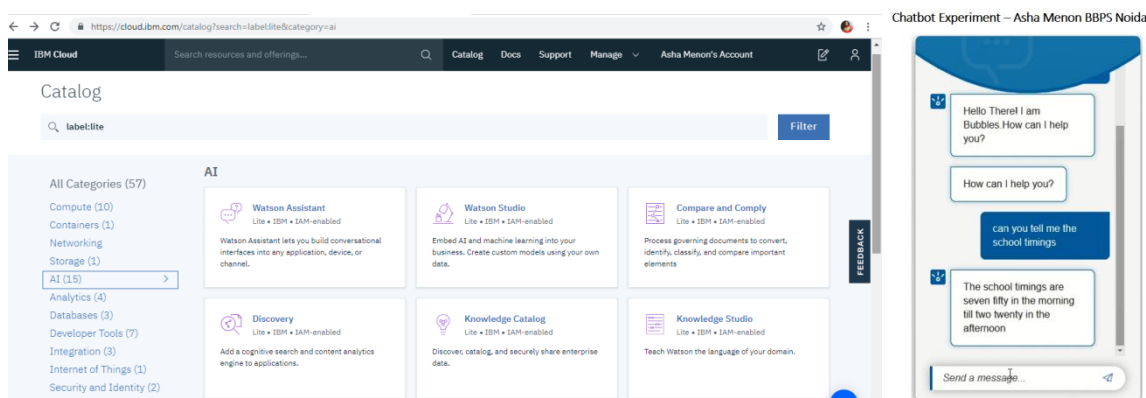## Day III (22.05.2019, Wednesday)
Session II
Topic: AI Practical's

The session was taken up by Mr.Shashidhar. He elaborated all about Gig Economy and how the future of work will change drastically with clearer scope of work.

He suggested that the practical's in AI can be conducted through Cloud Computing and Cloud Infrastructure. He explained how we can utilize the cloud services provided free by IT giants like IBM, Google, Microsoft, Amazon etc to try our hands on practical's in AI.

He gave a demonstration of two applications from the IBM Cloud Services - Personality Portrait and Watson Assistant - a Chabot.

It was a great session as it gave a hands on training on the use of the Cloud Services and how without necessary AI hardware and software, anybody could create AI enabled applications at home. This is a very good exercise for the students of class IX but in a later stage.

Day IV (23.05.2019, Thursday)
Session - I :

Topic : Neuro Science , Artificial Neural Networks and Deep Learning

Session begins with a detailed discussion on required 21st century skills and challenges of imparting 21st century education. He discussed 21st century era is marked by "fast paced transitional nature" and the education pattern has been transforming from single subject expertise to acquisition of multi subject knowledge. He also motivated through his lecture that to be in sync with rapidly changing world, one needs to be a lifelong learner so always engage in reading and learning new things. Further, he discussed "what is an artificial neural network?" and various applications of Deep learning like Self driving cars, Healthcare, Virtual assistants etc.

Session-II
Topic: Emerging trends in AI

Prof. Pant started the session with the importance of AI in future and emphasized on applications of AI in education i.e

- ❖ Virtual Facilitator
- ❖ Smart content
- ❖ Proctoring
- ❖ Chat box
- ❖ Adaptive learning
- ❖ Personalised learning
- ❖ Chat campus
- ❖ Automated grade

He discussed about the importance of skill based teaching learning and also recommended the
book "The fourth education revolution" by Anthony Sheldon. He has also explained about different levels of autonomous driving i.e.

       Level-1: Robotic process automation

       Level -2: AI enabled assessment

       Level-3: Recommender systems for learning guidance

       Level-4: Badges, Micro-credentialing and block chains

       Level-5: Fully AI empowered

 At last, Prof Pant presented his views on his vision regarding "Learning 321" i.e., learning in the 3rd decade of the 21st century. He emphasized this learning would be a blend of:

- ❖ The 'soul' of an IIT education i. E problem solving
- ❖ Global reach of distance learning
- ❖ Power of a motivated self-determined learning i.e., Heutagogy

GENERAL FEEDBACK	YES /NO/NOT SURE
The workshop was applicable to my job	Yes
We will recommend this workshop for other faculty members.	Yes
The program was well paced within the allotted time.	Yes
The material was presented in an organized manner	Yes
The resource person was a good communicator	Yes
The resource person was knowledgeable on the topic	Yes
We would be interested in attending a follow-up, more advanced workshop on this same subject	Yes
We will be able to conduct follow up workshop for the benefit of fellow Staff Members	Yes

The 4-day workshop ended on a positive note with all the participants agreeing in unison that they will encourage the learner in them and stay connected through the Whatsapp group.