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ATRIA INSTITUTE OF TECHNOLOGY

DEPT.OF ISE

IGNITE 2019-'20

Technical magazine

TABLE OF CONTENTS

ABOUT THE DEPARTMENT

The Information Science & Engineering department aims to impart the foundational and dedicated skills in design, programming, user interface, etc. For graduating students, exciting career opportunities are available in all these areas across the industry, government, and entrepreneurship sectors. The Information Science & Engineering department has State-of-the-art infrastructure for teaching-learning, research and consultancy. The department has MOUs with leading IT companies and research organizations. It has full equipped Laboratories and Centre of Excellence. Postgraduate and Research Programmes of the department provides ample opportunities for the students to explore emerging technologies and do result-oriented research. The placement record of the department has always been impressive.

HOD'S MESSAGE:

Congratulations to the students and faculty associated to magazine committee for successfully publishing this issue of departmental technical magazine 'IGNITE2020'. 'IGNITE' is creating platform which provides an opportunity to the students and staff to express their original thoughts on technical topics and highlight the technical events conducted in the department. The magazine plays an instrumental role in providing exposure to the students to develop their technical skills and also command over the written language. It is a step towards building professional and ethical attitude in them. Students not only gain the knowledge about the latest technological developments and advancements through reading and writing articles but they also develop verbal and written communication skills. This issue has expanded its scope by introducing articles by major stakeholders. Apart from students and faculty, inputs have been collected from alumni, parents and industry experts. On concluding note, I would like to thank all the stakeholders for their involvement and encouragement and wish all the best for their bright future.

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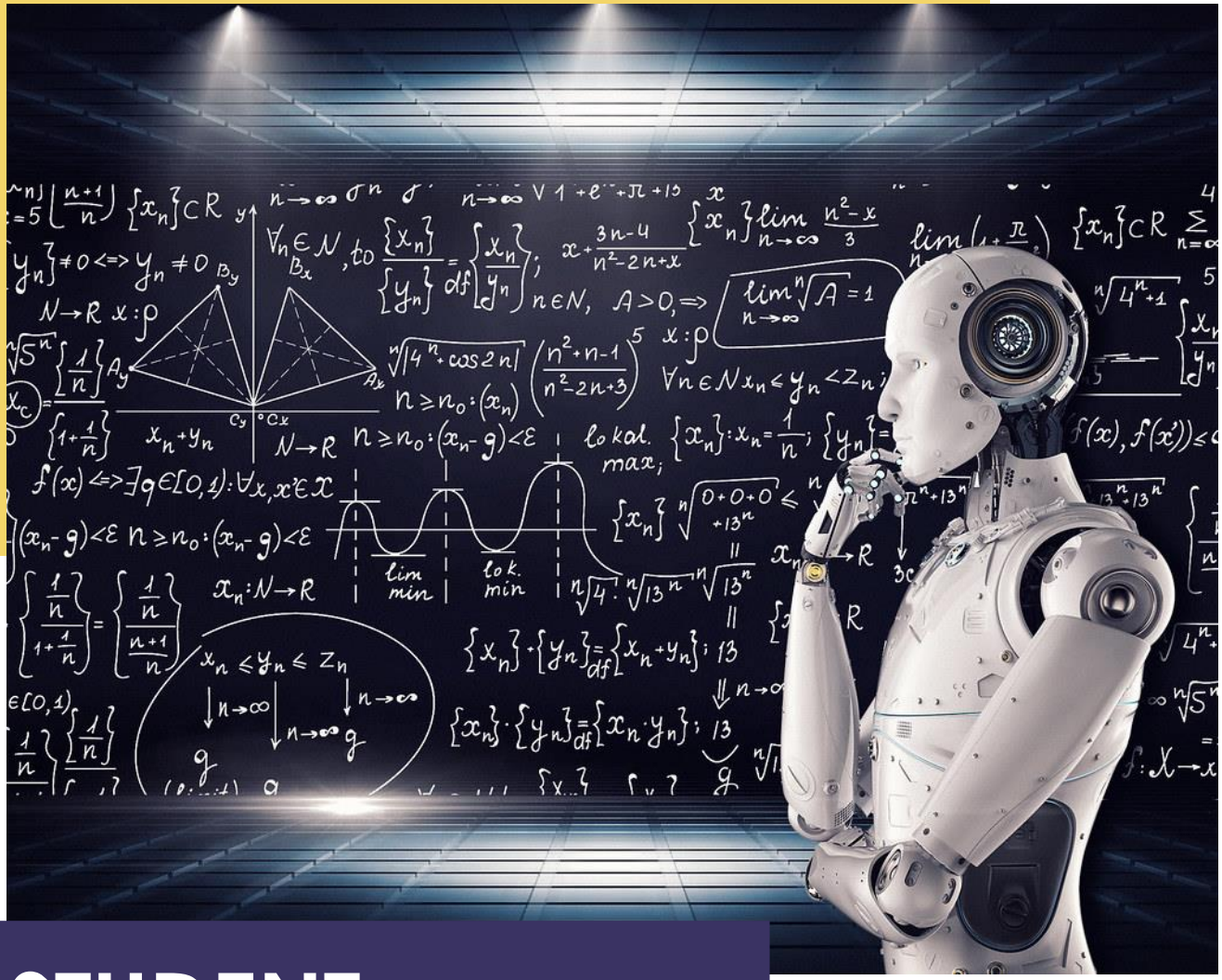

STUDENT SPACE

Development of Human-like Open Domain Chatbot

Student name: Vaishnavi S

The ability to converse freely in natural language is one of the hallmarks of human intelligence, and is likely a requirement for true artificial intelligence. In order to explore this aspect of intelligence, many researchers are working on open domain chatbots. Unlike closed-domain chatbots, which respond to keywords or intents to accomplish specific tasks, open-domain chatbots can engage in conversation on any topic. Some open-domain chatbots such as MILABOT, XiaoIce, Gunrock, Mitsuku and Cleverbot3 display human-like attributes, but rely on complex frameworks, such as dialog managers with knowledge-based, retrieval-based, or rule-based systems. End-to-end neural network approaches; Sordoni; Serban, on the other hand, offer the simplicity of a single learned model. Despite much research, open-domain chatbots still have weaknesses that prevent them from being generally useful: they often respond to open-ended input in ways that do not make sense, or with replies that are vague. Here Meena, a generative chatbot model that was trained end-to-end on 40B words mined and filtered from public domain social media conversations. With Meena, the limits of the end-to-end approach and show that a largescale lowperplexity model can be a good conversationalist. A seq2seq model with the Evolved Transformer as the main architecture. The model is trained on multiturn conversations where the input sequence is all turns of the context (up to 7) and the output sequence is the response. The best model has 2.6B parameters and achieves a test perplexity of 10.2 based on a vocabulary of 8K BPE subworlds. To measure the quality of Meena and other chatbots, they used a simple human

evaluation metric. Sensibleness and Specificity Average (SSA)combines two fundamental aspects of a humanlike chatbot: making sense and being specific. Human judges to label every model response on these two criteria. The first part of the metric, sensibleness, is a basic requirement. To converse properly with a human, a bot's responses have to make sense in context; humans typically take this for granted when conversing with one another, and the evaluationsfind that 97% of human-produced statements meet this criterion. However, making sense is not enough. If a model is designed with sensibleness as its only objective, itsresponses could be vague and boring, since that is a safe strategy to avoid being penalised for not making sense. For example, closed-domain chatbots typically respond with a generic apology when a human asks something outside their domain; some end-to-end learned chatbots respond "I don't know" to many inputs; and Turing Test contest entrants often try to avoid detection by being strategically vague. They succeed in not generating gibberish or contradicting themselves, but at the cost of not really saying anything of substance. To mitigate this, there is a second dimension to the SSAmetric, which asks the evaluators whether a response is specific given the context. This prevents from hiding behind vague replies, allowing us to more openly examine what they are capable of. This successfully distinguishes between generic and lively responses, while also being simple and easy for crowd workers to understand. When Meena, humans, and other open domain chatbots using the SSA metric with two types of human were evaluated: static and interactive. For static evaluation, curated a dataset with 1,477 multi-turn conversations. For interactive evaluation, humans could chat about anything they wanted. SSA metric shows strong correlation with Meena's perplexity, both in static and interactive evaluation. In other words, the better that Meena fit its training data, the more sensible and specific its chat responses became. At first glance, this result may seem intuitive, but it was surprising because recent research found a poor correlation between human evaluation scores and automatic metrics such as BLEU. Our best end-to-end learned model has an average of 72% SSA. The full version of Meena scores79% by incorporating a filtering mechanism and tuned decoding (Section 5). This is still below the 86% SSA achieved by an average human, but is far closer than the other chatbots tested. It has been noted that humans have very high sensibleness, but significantly lower specificity..

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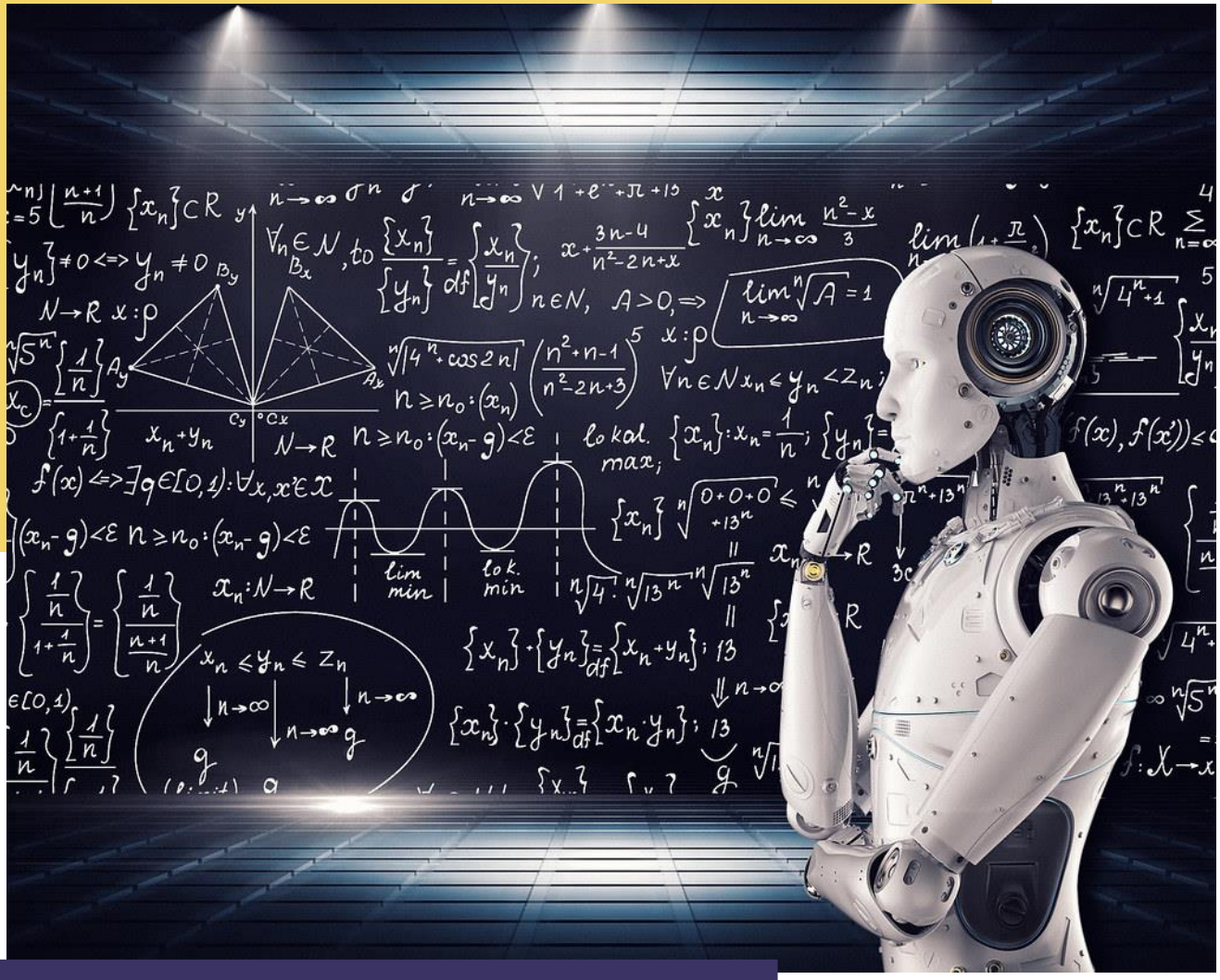
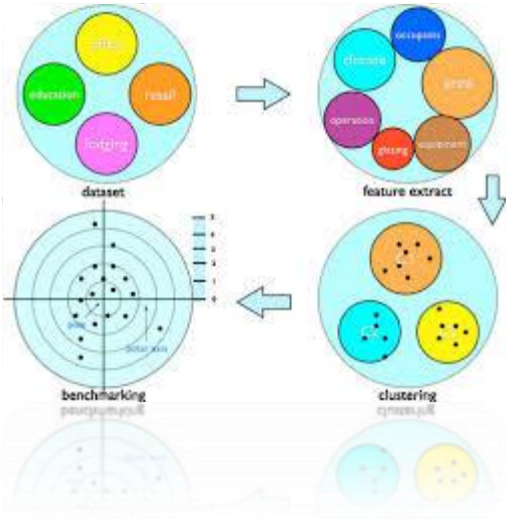


FACULTY SPACE



ENERGY EFFICIENCY CLUSTERING

Prof. Omprakash B

A. Institution Formation

As we make use of of WSN broadcast, the control of WSN should be routed to its middle stage; grouping demonstrates to be a a success system to cope with the sensor hubs along those traces by upgrading its life expectancy. numerous works over group arrangement were proposed with the resource of [5]. The grouping of sensor hubs display up often and the redesign of the framed bunch is carried on a cyclic premise. The originator may be assigned inside the route of the start of every cycle and the messages are communicated the use of distinct strategies that were pointed out in advance than for bunch association. for you to decrease the energy utilization the multi-leap based totally telecom device Is employed.

B. Cluster Head Election

The subsequent degree as quickly as bunch association is to pick out heads that bypass approximately as pioneer in every group. it is the load of organization heads to combination gaining knowledge of and guidance data from its bunch people to the base station. the burden level of the group head is just like the factors of the bunch. The Cluster head are haphazardly or pre-allotted with the resource of the planner of the gadget. the choice of bunch head is conveyed discretionarily in arbitrary determination philosophy, the choice is finished bolstered the opportunity that the hub was ne'er constituent as cluster head for the duration of its whole duration within the network. The burden more than one hub to move about as bunch head is in this manner diminished through turning the duty of the huge extensive style of hubs within the institution. The institution head choice is motility and takes vicinity in bound amount of your time. the tactic tries to scale back the energy consumption throughout the communication because it tries to put the cluster head terribly nearly to different nodes within the cluster .

C. Cluster Optimization

The size of the bunch is continuously a large factor that is uncovered to examination in modern machine, at the same time as tending to the issue of energy usage in WSN[8]. For a collection that has littler length the intracluster correspondence would no longer tradeoff a fantastic deal electricity but without a doubt bargain the tool backbone framework [9]. The tool encounters restrained burdens if the bunch size remains little, but the energy usage is excessive at some level in the intra-employer transmission and the lifetime is pretty decreased. these require an trade off in bunches association. apart from the place of the hub in a set, the dimensions of the institution and its closeness to the base station likewise use the energy resource[10]. The period of the bunch on the underlying structure period of the system consistently live to be arbitrary, besides the facts visitors among the hubs in a set and between the bunches are continuously choppy. Be that as it can, on specific situations the scale of the

corporations in the device is probably same which means that the quantities of hubs in all bunches are same.

This paper, a unique vitality effective and burden adjusted bunching technique ENEFCT has been predicted for periodical statistics accumulating. The pastime results display that the presentation of ENEFCT protracts set up time frame and moreover guarantees night out of hub electricity tiers. On exam with satisfactory in magnificence bunching calculations, as an example, LEACH, HEED and ENEFCTS, the proposed ENEFCT technique performs an lousy lot obviously better as far as power protection and leveling.

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ALUMNI SPACE

HOW HAS TECHNOLOGY CHANGED EDUCATION

Mr. Mohammed Ameenulla, Inurture Solutions

Large data platforms designed to handle unparalleled data volumes enter the system at high speeds and with a wide variety. These large data platforms often contain a variety of servers, information and business intelligence tools that allow data scientists to use data to discover styles and patterns.

What is big data?
Big data refers to complex and unstructured data sets that are quickly generated and transmitted from a variety of sources. These attributes form three Vs of big data:
1. Volume: Large amount of data stored.
2. Velocity: The speed of lightning at which the data streams are to be processed and analyzed.
3. Variety: Different sources and forms in which data is collected, such as numbers, text, video, images, sound and text.
Nowadays, data is always generated whenever we open an app, search Google or simply navigate to place with our mobile devices. The result? A large collection of important information that companies and organizations need to manage, maintain, visualize and analyze.
Traditional data tools do not have the ability to handle this type of difficulty and volume, which has led to the execution of special data software and construction solutions designed to manage the load. Big data is actually a contradiction of the three Vs to gain understanding and make predictions, so it helps to look at each attribute.

Volume

Big data is too big. While traditional data is measured in standard sizes such as megabytes, gigabytes and terabytes, large data is stored in petabytes and zettabytes.
To understand the size of the scale, consider this comparison from the Berkeley School of Information: one gigabyte is equivalent to a seven-minute video in HD, while one zettabyte is equivalent to 250 billion DVDs.
This is just the end of the ice. According to the EMC report, the digital universe is doubling in size every two years and by 2020 it is expected to reach 44 trillion zettabytes.
Big data provides a structure that manages this type of data. Without proper solutions for storage and processing, it would be impossible to dig for understanding.

Velocity

From the speed at which it is built to the time required for analysis, everything related to big data is fast. Some have described it as an attempt to drink a fire hydrant.
Companies and organizations must be able to use this data and generate insight from it in real time, otherwise it is not very useful. Real-time performance allows decision-makers to act quickly, giving them a leg up on the competition.
While some types of data can be processed and remain relevant over time, a large amount of data is distributed to organizations in a clip and requires immediate action for best results. Sensitive data from health devices is a good example. The ability to quickly process health data can provide users and physicians with life-saving information.

Variety

About 95% of all big data is unplanned, which means it does not easily fit into a straightforward, traditional model. Everything from emails and videos to science and weather data can create big data streams, each with its own unique characteristics.
How is big data used?
Big data diversity makes it naturally complex, which has led to the need for systems to be able to process its structural and semantic differences.
Big data requires special NoSQL data that can store data in a way that does not require strong adherence to a particular model. This provides the flexibility

needed to unravel the seemingly diverse sources of information to get a complete picture of what is happening, what to do and when to do it.
When data is compiled, analyzed and analyzed, it is often classified as performance or analysis data and stored appropriately.
Operating systems provide large amounts of data across multiple servers and include inputs such as installation, customer data and purchases - the daily data of the organization.
Analysis systems are more complex than their counterparts, which can handle complex data analysis and provide businesses with decision-making information. These systems are often integrated into existing processes and infrastructure to maximize data collection and use.
No matter how segmented, data is everywhere. Our phones, credit cards, software applications, cars, records, websites and many of the "things" in our world are capable of transmitting large amounts of data, and this information is incredibly valuable.
Big data is used in almost every industry to identify patterns and trends, to answer questions, to gain customer understanding, and to deal with complex issues. Companies and organizations use this information for a variety of reasons such as growing their businesses, understanding customer decisions, developing research, making predictions and identifying important advertising audiences.

Here are a few examples of industries where big data transformation is already in progress:

Finance

The financial and insurance industries use large amounts of data and forecasts to detect fraud, risk assessments, credit levels, trading services and blockchain technologies, among other uses.
Financial institutions also use big data to improve their cyber security efforts and to customize customer financial decisions.

Health care

Hospitals, researchers, and pharmaceutical companies use big data solutions to improve and advance health care.
With access to a plethora of patient data and demographics, health care is improving treatments, conducting more effective research on diseases such as cancer and Alzheimer's, developing new drugs, and gaining critical insights into patterns within human health.

Big data history

Data collection can be traced back to the use of stick tallies in ancient civilizations when tracking food, but the history of big data begins much later. Here is a brief timeline of some remarkable moments that have led to our day.

Year	**Upgradation**
1976	The commercial use of Material Requirements Planning (MRP) systems is based on data planning and planning, most commonly in the revitalization of business operations
1989	The World Wide Web was created by Tim Berners-Lee
2001	Doug Laney introduced a paper explaining the "3 Vs of Data," which became the basic symbols of big data. That same year the term “software-as-a-service” was first distributed.
2005	Hadoop, an open source software framework for large data storage is being developed.
2007	The term "big data" is introduced to many people in the threaded article "Theory End: The Flood of Data Makes Science Expired."

2008	A team of computer science researchers published the paper "Big Data Computing: Creating Revolutionary Breakthroughs in Commerce, Science and Society," explaining how big data basically changes the way companies and organizations do business.
2010	Google chief executive Eric Schmidt revealed that every two days people build as much information as people created from the beginning of civilization until 2003.
2014	Many companies are starting to move their Enterprise Resource Planning Systems (ERP) to the cloud. Internet of Things (IoT) is widely used with a limited number of 3.7 billion connected devices or devices, transmitting large amounts of data every day
2016	Obama administration released the "Federal Big Data Research and Strategic Development Plan," designed to conduct research and development of large-scale applications that will benefit society and the economy directly.

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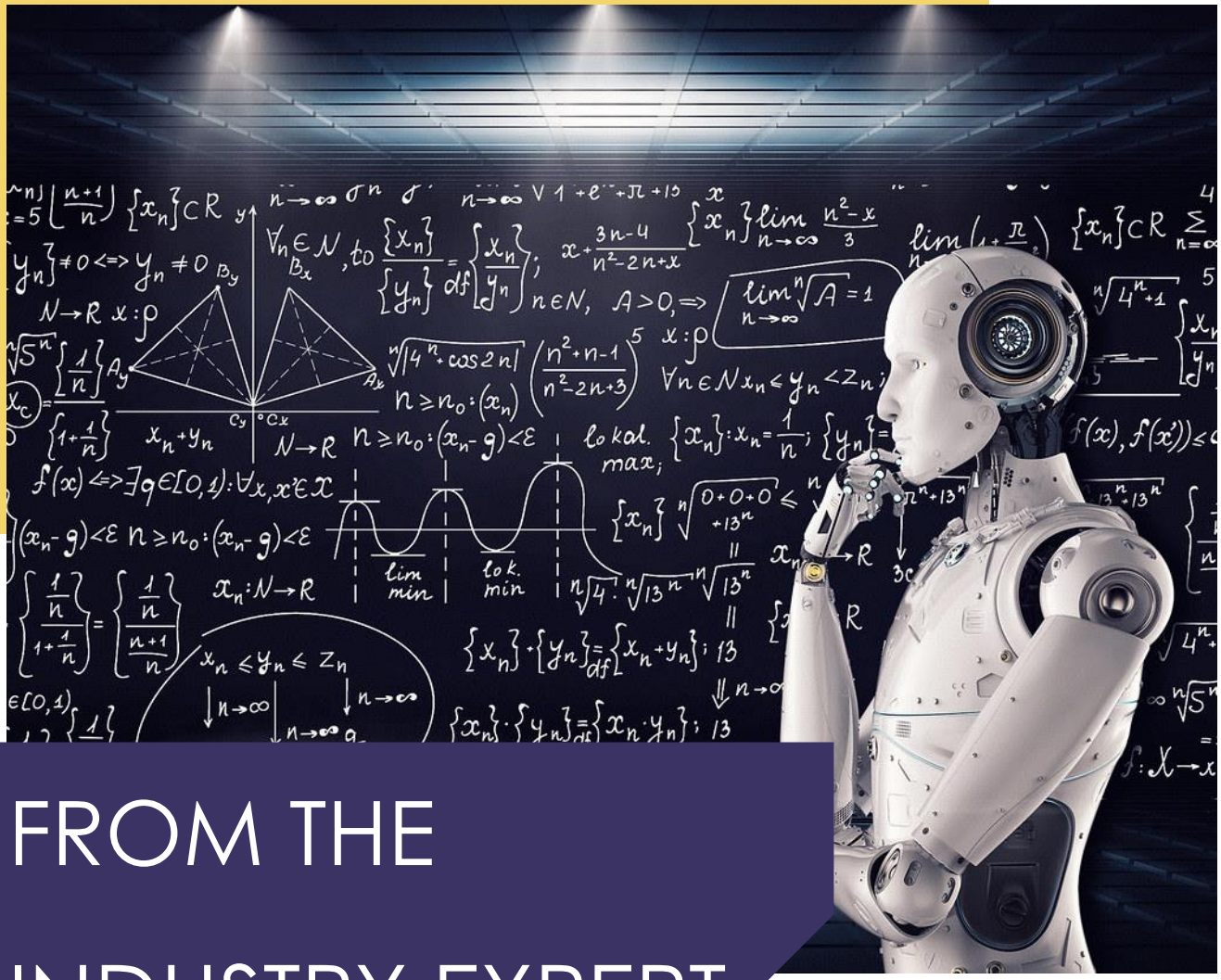

FROM THE INDUSTRY EXPERT

IOT NETWORKS TO ACCELERATE THE DEVELOPMENT OF DISTANCE MEDICINE

Mr. Anil T C, Hinduja Global Solutions

The technology is growing unstoppably and benefiting the healthcare domain through telemedicine. Thus, the implementation of IoT would work in favor of the industry experts as well as the consumers. Coined by Kevin Ashton in 1999, the Internet of Things (IoT) took another decade to be implemented. It is an interconnected network of physical devices that run on the internet. These devices collect and share data. Computer chips and wireless communication networks can turn anything into IoT. Using sensors in these devices, they can become digitally intelligent.

Some common examples of IoT are digital home door locking system, remote/device controlled lighting system, and driverless cars. It comprises drones used for transmitting and collecting important data. Besides, it also includes fitness trackers that record the stats and displays on using a smart device, etc. In fact, the project of smart cities is also developing rapidly across the world, especially in developing countries.

How Is IoT Growing In Telehealth Industry?

IoT is here in every industry for its betterment and growth. And the healthcare industry is no exception. Use of IoT at a high scale in several healthcare treatment methods, equipment, IT communication between doctors and patients. It also improves other domains such as mHealth, telehealth, telemedicine, and so on.

Telehealth is remote monitoring of the patient and its key vitals. This allows the patients and doctors to be far away yet remain connected consistently with each other and get the required medical help on time. This is helpful for patients suffering from chronic illnesses or old age. It also helps the busy ones struggling with finding time to meet the physician in-person.

Telemedicine technology helps people located in remote areas or the ones who are unable to visit the doctors and hospitals due to factors like distance, age, or busy lifestyle. It provides remote care and virtual healthcare assistance, which is more affordable and convenient for healthcare professionals and patients. Telemedicine is also effective for people suffering from serious ailments such as kidney issues, heart ailment, respiratory diseases like chronic obstructive pulmonary disease, diabetes that requires constant monitoring by their doctors. This saves rushing to the hospital at the last moment, high expenses of readmission in the hospitals, and in rare cases save the patient from death by giving treatment remotely at the right moment.

Need For Telemedicine in Developing Countries and Rural Areas

With the increasing demand in the healthcare industry, telemedicine is gaining more popularity. The demand is also rising in under-developed as well as developing countries due to the current lack of healthcare facilities. With telemedicine technology, it would become easier for the patients to reach the healthcare providers remotely. The telecommunication companies are also working on providing a stronger network in remote areas, to make this successful.

At present, these areas lack qualified healthcare staff, which makes the handling of critical conditions difficult. This also results in increased fatalities and more deterioration of the patient's health. Besides, hospital expenses and in-person consultation costs also add up to hefty expenditure. Thus, it would not be wrong to say that telemedicine technology is expected to revolutionize rural areas of developing and underdeveloped nations.

The usage of the Internet of Things (IoT) in healthcare (the industry, personal healthcare and healthcare payment applications) has sharply increased across various specific Internet of Things use cases. At the same time we see how other healthcare IoT use cases are picking up speed and the connected healthcare reality is accelerating, even if hurdles remain.

Thus far, most IoT initiatives in healthcare revolved around the improvement of care as such with remote monitoring and telemonitoring as main applications in the broader scope of telemedicine. A second area where many initiatives exist is tracking, monitoring and maintenance of assets, using IoT and RFID. This is done on the level of medical devices and healthcare assets, the people level and the non-medical asset level (e.g. hospital building assets).

By 2019, 87% of #healthcare organizations will have adopted IoT technology

However, these deployments and use cases are just the beginning and, at the same time, are far from omnipresent. More advanced and integrated approaches within the scope of the digital transformation of healthcare are starting to be used with regards to health data aspects where IoT plays an increasing role, as it does in specific applications such as smart pills, smart home care systems, personal healthcare, robotics and Real-Time Health Systems (RTHS).

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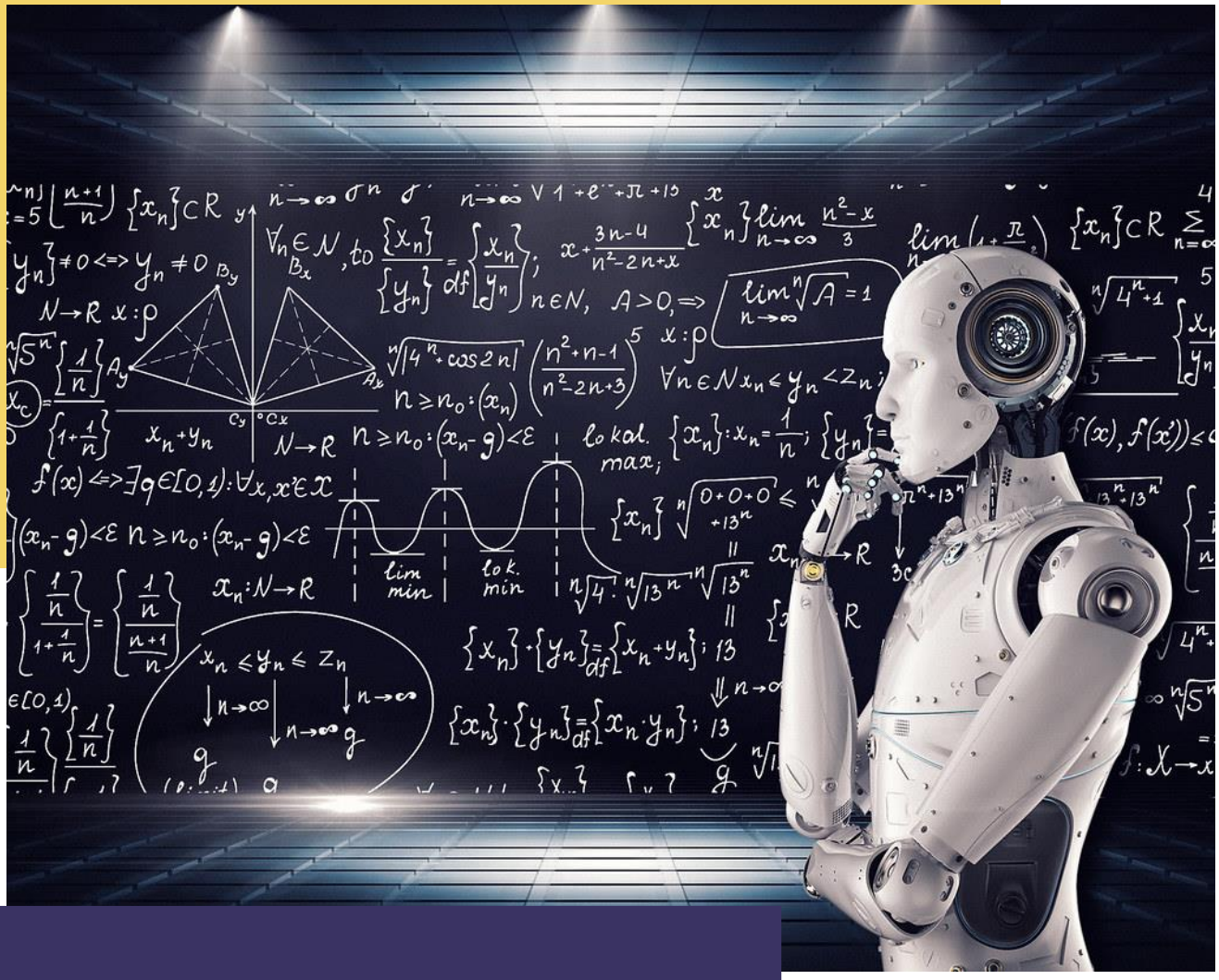


DEPARTMENTAL EVENTS

1. One Day Seminar on "Automata Theory and Computability" on 15/10/2019

2. A session on Amazon Web Services on 26th July 2019

3. One Day Workshop on "Competitive Programming and Interview Webinar on "Amazon web services" was conducted by Mr.Ramesh Karuti, Team Lead, IBM India Pvt Ltd, Benagluru, for 5th and 7th sem students on 11/08/2020

One Day Seminar on "Automata Theory and Computability"

Title of Seminar: "Pushdown Automata and Turing Machines"
Date: 15/10/2019
Event conducted for: 5th semester students of Information Science & Engineering (ISE 1 & ISE 2)
Speaker Name: Prof Tulsimala from Mount Carmel Degree College
Organization Name: Mount Carmel Degree College
Duration: 09:30 am to 12:30 pm

Objectives:

- Introduce core concepts in Automata and Theory of Computation.
- Conversion from CFG to PDA and vice-versa
- Identify different Formal language Classes and their Relationships.
- Prove or disprove theorems in automata theory using their properties (decidability problems)

Topics Covered:

- Role of Automata Theory Concepts in designing software.
- Practical applications in real world.
- Various Machines with their Models.

Students Attended: 62

Gallery:

A session on Amazon Web Services on 26th July 2019

Title: A Session on "**Amazon Web Services**" by Ms. Vaishali Ravindra Thakare

Date: From 26th July 2019.

Duration: 2:00 pm 3:00 pm

Program Coordinators: Mrs. Neha Mangala (Associate Professor, Dept. of ISE)
Resource Persons: Ms. Vaishali Ravindra Thakare
Objectives:

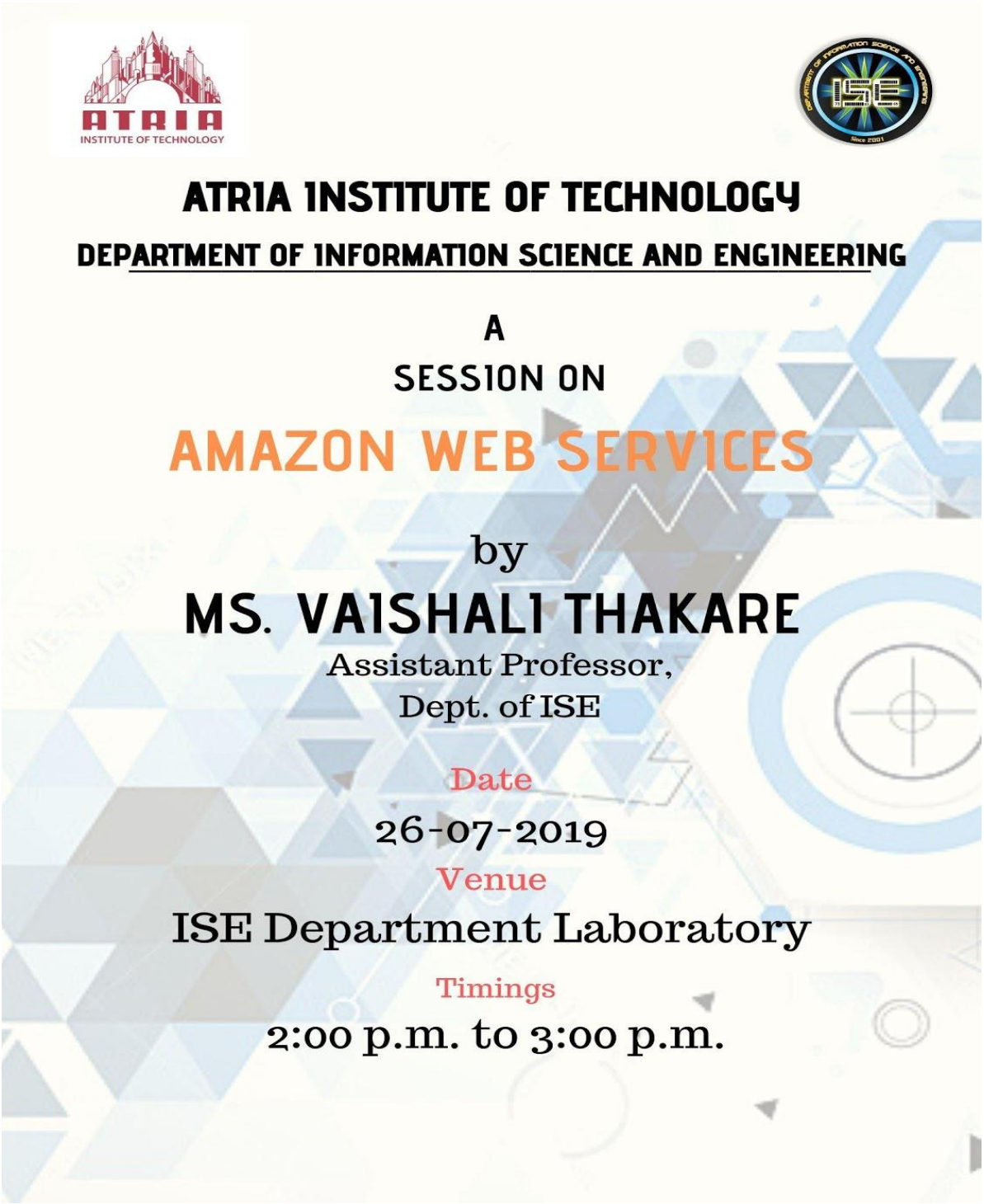
1. To introduce AWS Services to our faculties
2. To provide AWS services details and day to day examples
3. Success stories with AWS
4. To get familiar with AWS management console
5.

Topics Covered:

1. Quick introduction about cloud computing
2. About different AWS Services
3. Global AWS Infrastructure
4. AWS account creation
5. Demo of Compute Service (Elastic Compute Cloud-EC2)
6. Strategy for migrating on-premise to cloud using cloud migration service
7. Q & A Session

Outcomes:

1. Audience got to know about different AWS Services
2. Discussion on different services of AWS
3. Account creation in AWS
4. Discussion on migration services and limitations
5. Q & A session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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING
A
SESSION ON
AMAZON WEB SERVICES
by
MS. VAISHALI THAKARE
Assistant Professor,
Dept. of ISE
Date
26-07-2019
Venue
ISE Department Laboratory
Timings
2:00 p.m. to 3:00 p.m.

Session Glimpse:

One Day Workshop on “Competitive Programming and Interview “

Company/Speaker's Brief Profile:

Mr. Navdeep Sandhu from Coding Ninjas. He is having more than 5 years of experience in his field.

About the talk
1.To teach the students concepts like time and space complexity, how and where to apply searching and sorting algorithms.
2.To teach the students on how to optimize the code.
3.To evaluate their performance by conducting online coding contest.

Outcomes of the talk:

1. **Students understood the need to write efficient, optimized code.**
2. **Students eagerly participated in the online coding event conducted.**
3. **Some of the students gained confidence that they were lacking in coding for a problem.**

Also they found it useful that many extra content was shared with them which will help them in preparing for placements.

4. **Students were also motivated by distributing goodies to those who won the coding event and the ones who helped in organizing the event.**

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- *Prof Asma Begum*
- *Prof Uzma*
- *Prof. Vidhya*

Students

- *Arjun*
- *Pratiksha*
- *Anupama*
- *Sachin*

ACKNOWLEDGEMENT:

AT THE END, WE WOULD LIKE TO EXTEND OUR SINCERE GRATITUDE TO OUR MANAGEMENT FOR THEIR CONSTANT SUPPORT. ALSO WE WOULD LIKE TO THANK OUR PRINCIPAL,

DR. T. N. SRINIVASA AND DEAN ACADEMICS , FOR THEIR ENCOURAGEMENT.

WE WOULD ALSO LIKE TO THANK OUR HOD DR. SHANTHI MAHESH FOR THE INNOVATIVE IDEAS AND ADDITIONS ADDITIONS MADE TO OUR MAGAZINE, AND FACULTY IN CHARGE , KAVITHA VASANTH FOR SHAPING THE 'IGNITE'-2020-'21.

ALSO A HEARTFELT THANK YOU TO THE FACULTY MEMBERS, STUDENTS AND ALL STAKEHOLDERS FOR THEIR VALUABLE INPUTS.

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