

ATRIA INSTITUTE OF TECHNOLOGY

DEPT.OF ISE



**IGNITE 2018-'19**

Technical magazine

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## 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.

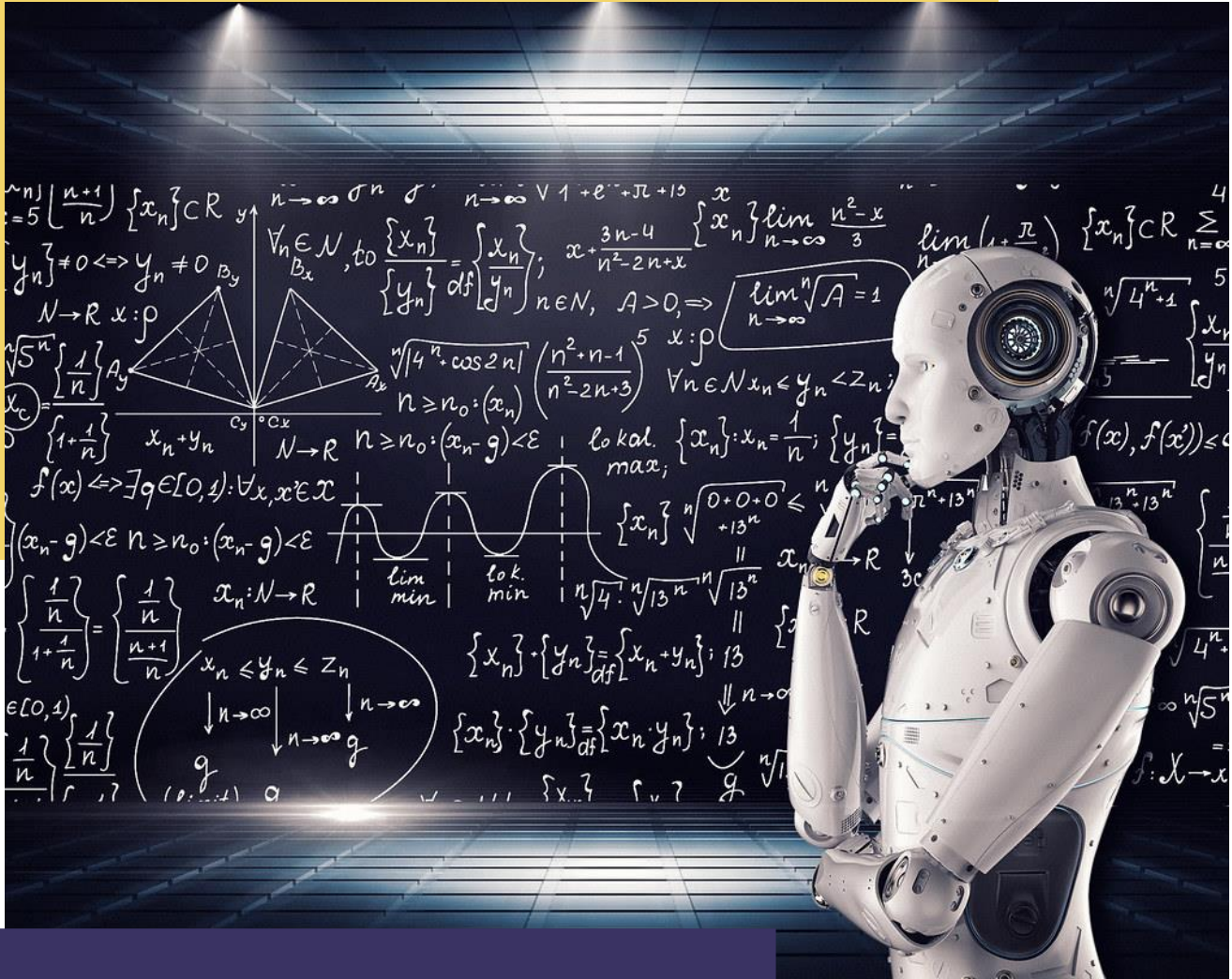


### **HOD'S MESSAGE:**

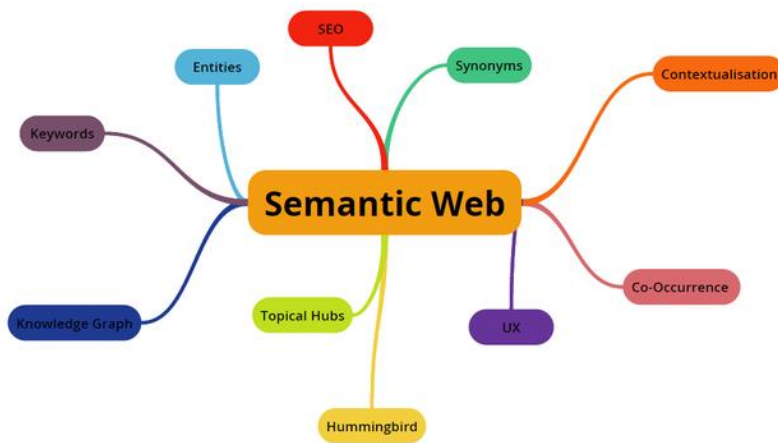
Congratulations to the students and faculty associated to magazine committee for successfully publishing this issue of departmental technical magazine 'IGNITE2020'. 'IGNITE' is creating platform which provides an opportunity to the students and staff to express their original thoughts on technical topics 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.

ATRIA INSTITUTE OF TECHNOLOGY

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**STUDENT  
SPACE**



## Semantic Web

*Student name:*

In many ways, this is the culmination of decades of construction, in which the dream of Semantic Web has never been erased, but it has never disappeared. In fact, the Web Semantic Web is growing, and as it renews its purpose we should all benefit by adding semantic symbols to our websites, be it personal blogs or social media giants. Whether you are interested in complex web experience, SEO, or defending corporate corporate tyranny with the web, Semantic Web should be taken into account.

The benefits of developing Semantic Web are not always immediate, or visible, but all sites that strengthen the foundations of an open, transparent, low-level internet.

### **What exactly is the Semantic Web?**

A machine-readable web provides metadata “a standard framework that allows data to be shared and reused across applications, businesses, and social boundaries.”

The concept is as old as the World Wide Web itself. Old, actually. It was the focus of Tim Berners-Lee's 1989 proposal. As he explained, he should not only document his webs, but also the details within them: the semantic web is nothing but a web of data.

For various reasons, the Semantic Web has not moved in the same way as the Web,

although it does host. Several markups have tried to take the garment over the years - RDFa, OWL, and Schema to name a few - though none have standard, say, HTML or CSS. The barrier to entry was very high.

However, Semantic Web's dream has come true, and as more and more sites are incorporating it into their designs there is an additional reason to join the team. The more sites go into the board, the Semantic Web becomes stronger.

### Information Without Limits

There are a number of reasons why Webantic Semantic continues to be driven by those who care about free and open internet. Understanding those reasons is essential to the implementation process. It should not be a case of 'eating your own vegetables, using marine art.' Semantic Web is something you have to believe in and be a part of.

The benefits of Semantic Web include:

- Rich, sophisticated web experience
- Excess content of silos and internet monopolies
- Improved readability of search engines and standards
- Information democracy

### **DETAILS OF DETAILS**

Designing and developing Semantic Web means looking at online content and your data cap. Most of us see the web as a series of documents or links; what you want to do with Semantic Web is to connect the details. This means checking your content to get data points and adjusting the composition based on your findings.

- Find- Obtain data sets and / or content (including outside your organization).
- Mix- Connect relationships using sensible labels.
- Confirm- Provide input into modeling and simulation programs.
- Check- Develop ways to convert data into functional information.

The development of Semantic Web is primarily about having a bird's eye view of what you do, and how it can feed you on an unlimited rich web experience. As Hendler points out, practical knowledge is the goal.

This can be applied to almost any type of web content, but let's start with a common example: recipes. Suppose you are using a cooking blog, with new recipes every Thursday. If you are French and post a smashing soufflé recipe to your own blog in plain text, it is only useful for those who can learn French.

However, by using a semantic marker the blog can be converted into a machine-readable recipe data set. Syntax is available for cooking terms to be extracted. Schema, for example, that can work alongside Microdata, RDFa, or JSON-LD

Content is the same as before, only now connected to the metadata ecosystem - Ontology, as Berners-Lee once called it.

Creating a Semantic Web means identifying your data, tagging it, and looking at how it connects to other data. Because it does. It always is.

### **Getting inside**

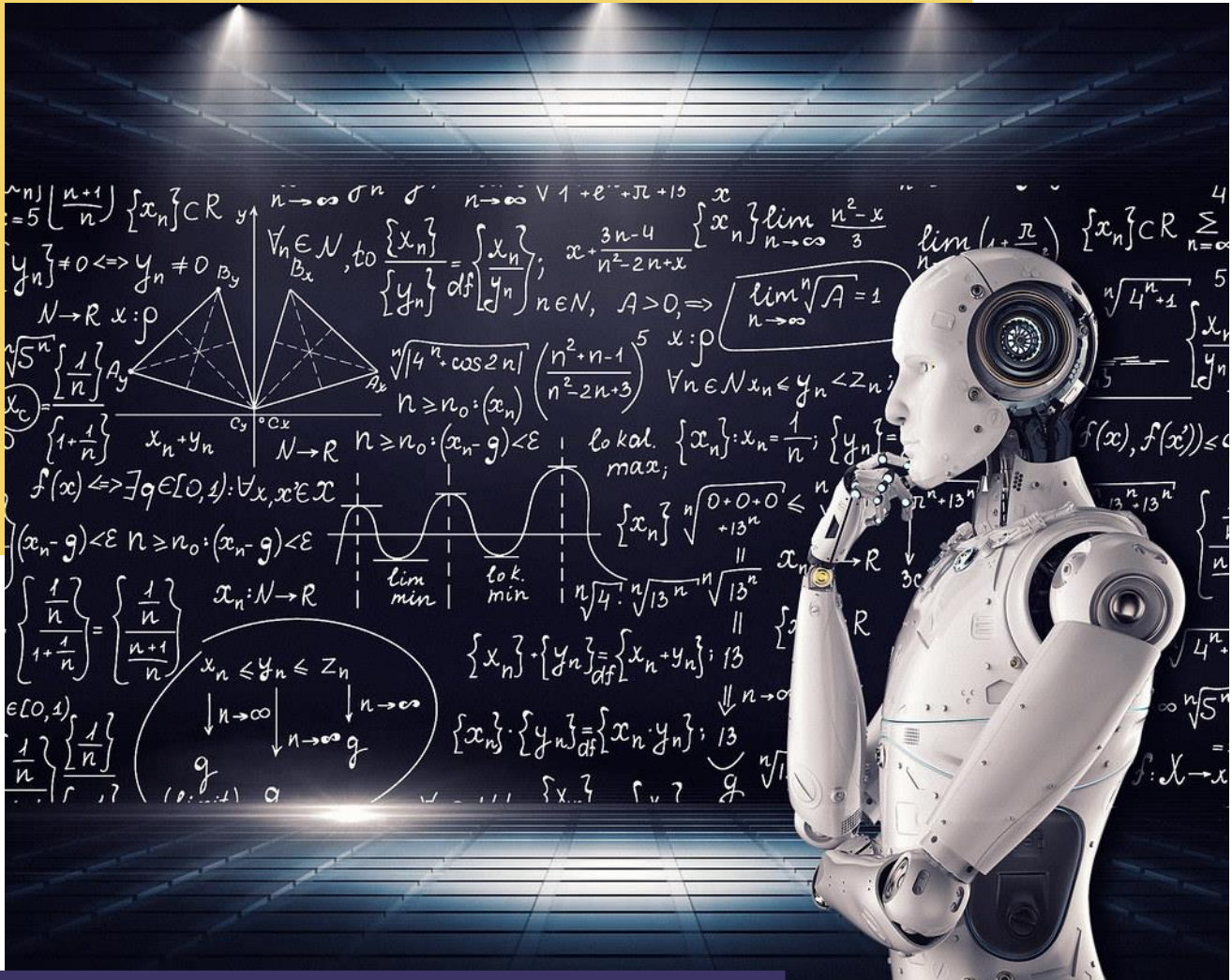
The concept of the Semantic Web is communication. Create data, share data, search for data. Be part of the information system. If you are creating real data, that's fine. Share it. When data is already available and you would like to use it, drag it inside.

### **Without Thinking**

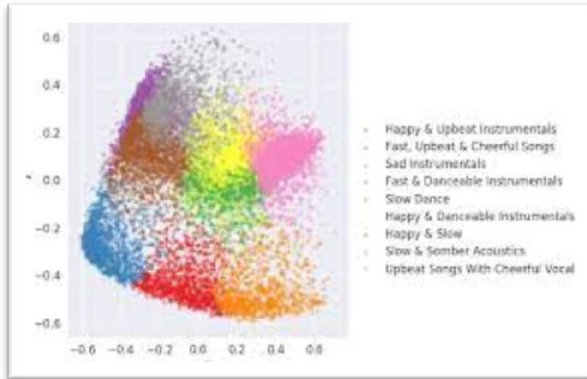
The design and development of Semantic Web is a practice based on the Internet's founding goals. Whether you appreciate good, informative data visibility, want complex search results, wish to remove power from webmasters, or simply believe in free and open information, Semantic Web is your partner.



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FACULTY  
SPACE



## IDENTIFYING TRENDS IN AUDIO FEATURES TO RECOMMEND MUSIC

*Prof. Abhilash G*

**Abstract** – Music is available in large numbers and the overload is excess. Hence a recommender system helps a user to narrow down the search to a few relevant songs that a user might want to listen to. All recommendation engines recommend music to users based on different features and metadata of music. Genres are important because we develop strong tastes in particular genres, as per our liking. It helps us organize our music collection.

But genre-based music recommendation is traditionally carried out based on the genre that is provided by the artist which is very vague and defines only what the artist thinks about the music. Every artist has their own perspective about how they understand a genre, and this confusion will reduce the efficiency of a recommendation to a user. A more descriptive genre-based music recommendation using genre clustering identifies a distinct group based on musical features alone and can improve the reliability for recommendation.

**Key Words:** K-Means Clustering, Genre Clustering, Music Recommendation, Cold Start, Genre Similarity.

### 1. INTRODUCTION

Clustering music into genres based on audio features allow music to be described in new ways. Artists have always used their own notion of genre to describe music in the past. Music pleases every human being in a different way and the only way to make it uniform is to identify a common trend from the audio features and describe music. Sometimes there is confusion to what a genre label actually defines. A more descriptive naming approach solves this problem. Recommendation of music is carried out in different ways, popularity based recommendation is the most common of them all. Newer algorithms adapt content-based recommendations where music is curated to a user based on the user's behavior. Tracking all the music played by a listener and recommending similar types of music to the user. A different approach to this would be to include the user to user behavior and combining it with the content-based recommendation.

## **1.1 Clustering**

Clustering algorithms are used to learn from data points and segregate them into smaller groups of data points based on different features, Clustering is the ideal way to find similarities in a large pool of data points and these groups that are formed can be said to have similar trends.

They allow us to identify trends in data and based on how these data points are distributed on graphs, each group can be assigned some description or label. Similarly in a recommendation engine clustering will identify similar users using which user to user interactions can be tracked.

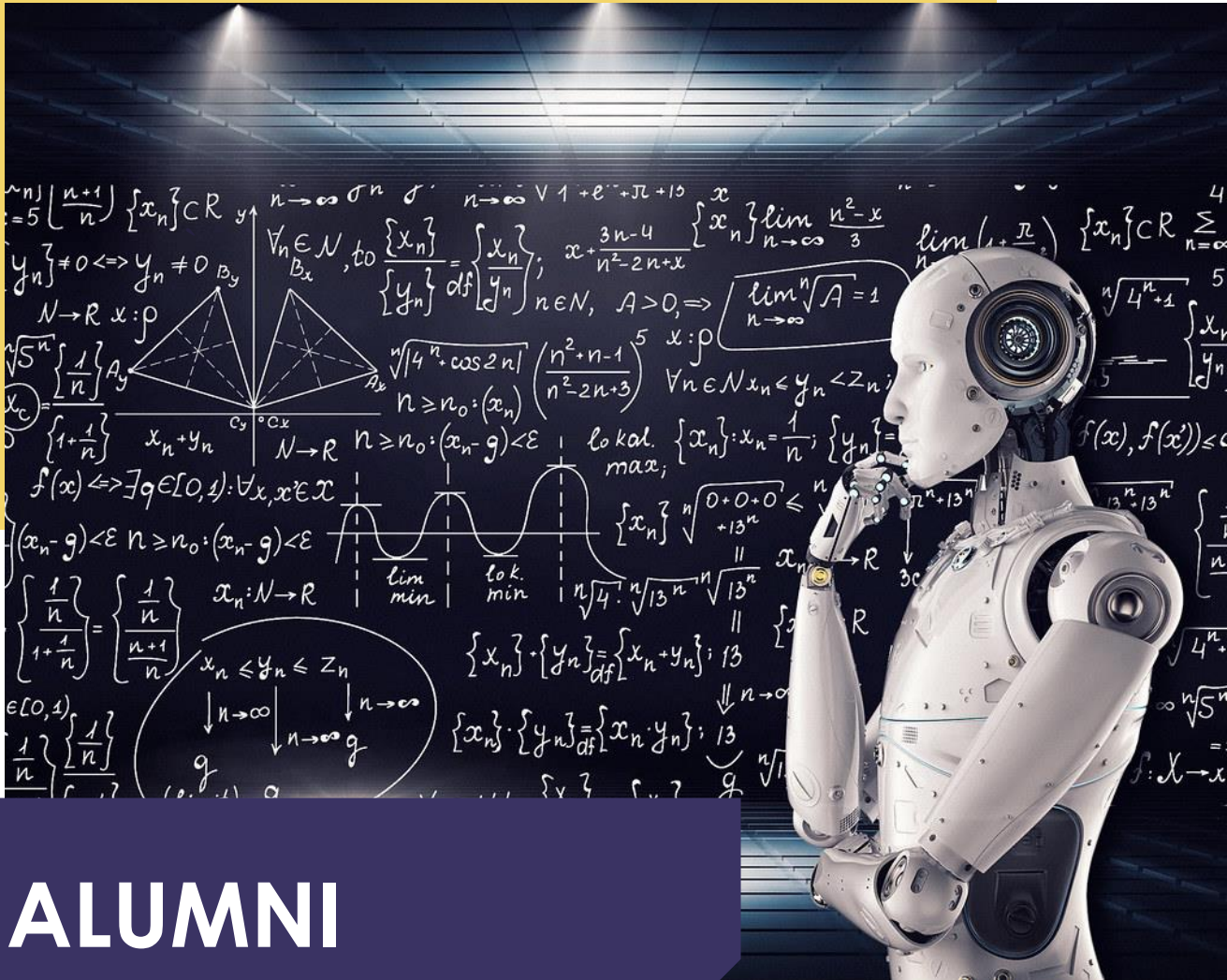
## **1.2 K-Means**

K-means clustering is the most popular clustering Machine learning algorithm that uses the nearest mean method based on the Euclidean distance to identify which group a data point belongs to. It considers cluster centers and takes straight line distance to unclassified points and groups them to the nearest cluster centre. The figures below

represent how clustering is able to identify new data points that are not subjected to an artists' preferences.

By using audio properties to cluster and group similar tracks together users will be listening to what they want rather than what is defined by the artist. Recommendation based on the genre can be further made more user- understandable by naming each cluster with descriptive names. Recommendation using K-means works on top of the clustered data to recommend the most suitable tracks to the user. Figures below represent how clustering is able to identify new data points that are not subjected to an artists' preferences.

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ALUMNI  
SPACE



## ENTERPRISE RESOURCE PLANNING (ERP)

*Mr.*

Enterprise Resource Planning (ERP) helps businesses manage, maintain, and integrate supply chain management, manufacturing, inventory management, and many other key processes.

Whether client / server or cloud-based, the ERP system is built around the philosophy of centralized data using a wide range of central databases. This makes the workflow more efficient and reduces examples of duplicate data.

Because of these features, the process of integrating an ERP system into a business for the first time is automated. In addition to the benefits that come with the ERP application, there are other features and functions that ERP automation has.

What is ERP Automation?

There are two ways of thinking that apply when defining ERP automation. On the one hand, this approach looks at a variety of tools and dedicated applications that can help improve and automate more traditional business processes integrated into ERP.

On the other hand, a different definition includes new technologies and concepts such as IoT and how they can be applied to ERP solutions. The first definition is more than the natural continuation and development of ERP systems. The latter was more disruptive and forward-looking.

Robotic process automation in the ERP system:

ERP systems often come with a lot more functionality off the shelf. Upgrading a business into an ERP-driven workflow is, by nature, a form of

automation. The reality, however, is that the most comprehensive ERP systems on the market, by default, rely heavily on "human interaction". This could be manual data entry, scanned copies of documents and signatures, and manual report creation.

This is where robotic process automation (RPA) comes into play. RPA is a process and technology. RPA uses automated agents or robots called bots. Not to be confused with physical robots in industrial automation, a bot is a software program designed to automate a task or process. Typically, these tasks are repetitive and laborious. When a bot is used, humans have more time to work on tasks that only humans can do. In the ERP world, there are many applications that have proven that robots can help. Below are some examples of these applications in various business processes

Supply chain management

Automatic Invoice

Automatic reporting

Data Localization - The Magics Bullet?

In the wake of the Shrems II decision, and in light of Facebook's decision on Friday, everyone has a question of how to really protect personal data from the eyes of national security agencies around the world. Despite the detailed guidelines issued in November 2020, when there are no new precise guidelines

for transferring data across European borders, many are wondering whether data localization is the magic pill to protect personal data.

The terms ‘data sovereignty’, ‘data residence’ and ‘data localization’ are confusing to many. They are effective to three degrees of the same concept: how data privacy affects the boundary data flow. This is important as companies must ensure that their privacy is not compromised when processing the Shrems II decision and personal data and are subject to government surveillance when shared across borders.

Data residency refers to the country in which an organization claims that its data is stored, usually for regulatory or policy reasons. A general data residency requirement for example tax benefits: To establish that a company operates in a given country in a given country, it establishes an infrastructure to protect its tax rights. Strict data management is required.

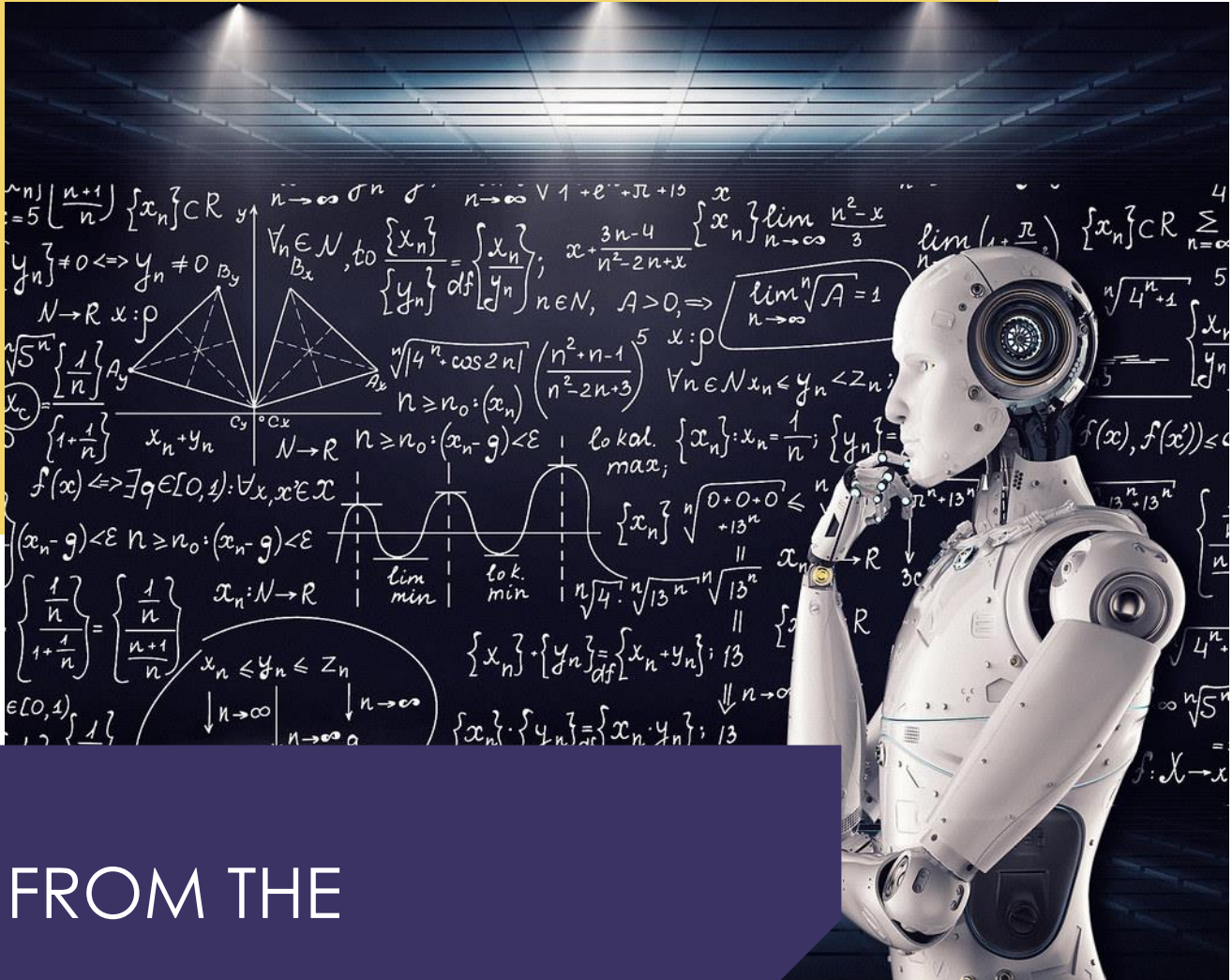
Data sovereignty differs from data residency in that the data is stored not only in a specific location, but also subject to the laws of the country in which it is physically stored. This distinction is important because data centers have different privacy and security requirements depending on where they are physically located. From a legal standpoint, the difference is important because government data access rights vary from country to country.

Data localization is the most rigorous concept of the three, hence it is called "hard data localization". For this the data created within certain limits must be in them and always applies to the creation and storage of personal data without exception. A good example of this is Russia's On Personal Data Law (OPD - Law), which requires data storage, updating and retrieval of data on its citizens if it is to be limited to data center resources in the Russian Federation.

In the world after Shrems II, some companies felt that GDPR needed hard data localization. Such methods are realistic, and the question is whether they provide the same privacy protection as GDPR.



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FROM THE  
INDUSTRY EXPERT

## WIFI 6 AND WIFI 6 E

*Mr. Anil T C, Hinduja Global Solutions*

WiFi 6 is the next-generation standard in WiFi technology built in response to the growing number of devices in the world. If you own a VR device, multiple smart home devices, or simply have a large number of devices in your household, then a WiFi 6 router might be the best choice for you.

WiFi 6 uses both 1024-QAM to provide a signal packed with more data and a 160 MHz Channel to provide a wider channel to make your WiFi faster. This means you could enjoy a stutter-free VR or stunningly vivid 4K and even 8K streaming. More importantly, technologies like MU-MIMO and OFDMA generated from WiFi 6 provide up to 4x larger capacity and to handle more devices. With WiFi 6, you could easily throw house parties with a network built to handle all your guests and their devices.

Wi-Fi 6 and previous generations of Wi-Fi use the 2.4 GHz and 5 GHz radio bands. A “Wi-Fi 6E” device is one that is capable of operating on the 6 GHz band, too.

The 6 GHz spectrum should work similarly to WiFi 6 over 5 GHz but offers additional non-overlapping channels. As the Wi-Fi Alliance puts it, Wi-Fi 6E allows for “14 additional 80 MHz channels and 7 additional 160 MHz channels.” These channels wouldn’t overlap with each other, which will help reduce congestion, particularly in areas where lots of networks are operating.

All the devices communicating on the 6 GHz spectrum would also be Wi-Fi 6 devices. There wouldn’t be any older devices using standards like Wi-Fi 5 (802.11ac). All devices on the 6 GHz channels will be speaking the same language and can use Wi-Fi 6’s new congestion-busting features.

Wi-Fi 6E adds support for 6GHz wireless spectrum, for faster wireless speeds and lower latencies than previous generations, but you'll need a new router and Wi-Fi 6E-compatible devices to take advantage of those new airwaves

The Wi-Fi Alliance, a group of Wi-Fi platform vendors that work with the FCC and electronics manufacturers to set standards for Wi-Fi technology, announced the Wi-Fi 6E designation in 2020 for any IEEE 802.11ax ([Wi-Fi 6](#)) products that support 6GHz wireless spectrum. Essentially, this means Wi-Fi 6E enables faster speeds and lower latencies than Wi-Fi 6 and earlier iterations.

When the IEEE 802.11ax (Wi-Fi 6) standard was first announced, it was limited by law to a wireless spectrum that only covered the 2.4GHz and 5GHz bands. Now, in a 2.4GHz band, you really have only three non-overlapping channels—and that bandwidth is shared by you, your family members, and your neighbors.

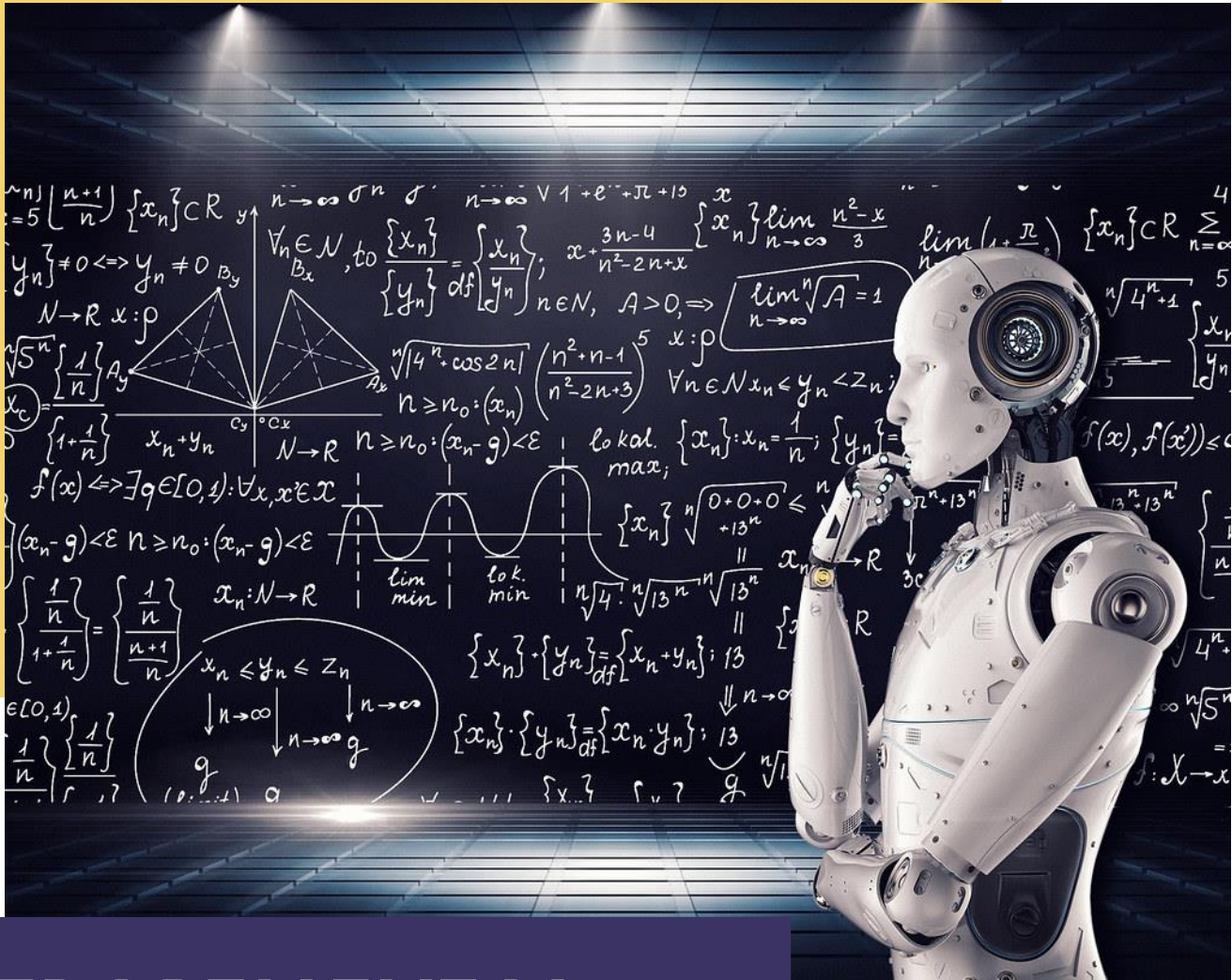
If you've ever had problems staying connected to a Zoom call or had the latest episode of *The Mandalorian* pause for buffering, spectrum congestion was probably the cause. If too many devices compete for bandwidth on the same wireless channel, then some of those signals will be dropped.

This isn't just a matter of how many family members are connected to your home's Wi-Fi network. Any other Wi-Fi network in range (such as the one beaming from your neighbor's wireless router) is competing for bandwidth on the same limited number of channels.

In April of 2020, the Federal Communications Commission voted unanimously to open up the 6GHz band for unlicensed use. With that policy change, significantly more airwaves are open that routers can use to broadcast Wi-Fi signals—and that's a big deal.

The opening of the 6GHz band is the biggest spectrum addition to Wi-Fi since 1989. The jump from 5GHz to 6GHz might not sound like much, but it essentially quadruples the amount of airwaves (14 additional 80MHz channels, and seven additional 160MHz channels) available for routers and smart devices. That means less signal interference.

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DEPARTMENTAL  
EVENTS



1. *SDP on Applications of Internet of Things was conducted on 4th October 2018*
2. *A technical seminar on Machine Learning-A walk through the basic concepts of ML was conducted ,on July 25th, 2018*
3. *Workshop on Robotics Process Automation was conducted on 5th and 6th October 2018*
4. *Seminar on Web Technologies and its applications was conducted on July 27th, 2018*

## A SDP on Applications of Internet of Things

A SDP on **Applications of Internet of Things** was conducted on 4th October 2018 by Department of Information Science and Engineering, Atria Institute of Technology, Bengaluru.

**Title:** Applications of Internet of Things

**Date:** 4<sup>th</sup> and 6<sup>th</sup> October 2018 at 1.00pm to 4.00pm

**Participated by:** 6<sup>th</sup>,8<sup>th</sup> semester students of ISE

**Number of Participants:** 132

**Organizer:** Department of ISE, Atria IT, Bengaluru.

**Coordinators:** Prof. Manjula H Nebagiri

**Duration:** 3.00 hours

**Speaker:**

SPEAKER NAME	DAY	SESSION	TOPIC
<b>Mr. Sufian, Atria Institute of Technology</b>	<b>1</b>	<b>1</b>	- Overview of IoT <ul style="list-style-type: none"> <li>• Introduction</li> <li>• Essential characteristics</li> <li>• History and Evaluation</li> <li>• Key service provides and services</li> <li>• Importance of IoT</li> </ul>
		<b>2</b>	- Types of IoT users -IoT Service Models
		<b>3</b>	- Components of IOT
		<b>4</b>	- Key Elements of AWS

**Objectives:**

- To introduce the concepts of the IOT,
- Introduction to IoT interfaces,
- Overview about Components of IoT
- Understand Trends and Practices

**Outcomes:**

At the end of this workshop, participants were able to:

- Understand the basics of the IoT.
- Able to use IoT services for different applications.
- Able to differentiate between the hardware and software parts

## **A technical seminar on Machine Learning-A walk through the basic concepts of ML**

A technical seminar on **Machine Learning-A walk through the basic concepts of ML** was given on July 25<sup>th</sup>, 2018 by **Mr. Abhilash** at **Department of IS&E, Atria Institute of Technology, Bengaluru.**

**Title of technical seminar: Machine Learning-A walk through the basic concepts of ML**

**Date:** July 25<sup>th</sup>, 2018

**Event conducted for:** Faculties of ISE department

**Speaker Name:**

1. *Mr. Abhilash*

**Organization Name:** Atria Institute of Technology

**Duration:** 11:00 am to 12:00 pm

**Attended by:** Faculties of ISE department

**Objectives:**

- To introduce some of the basic concepts of machine learning.
- Able to differentiate what is supervised, unsupervised and reinforcement learning
- Importance of each algorithm
- Machine learning intensity from 1950's to 2018
- Machine learning techniques that are implemented in today's mobile application market

**Topics Covered:**

- What is machine learning
- Relationship between humans-machines and machine learning
- Different types of learning in machine learning
- Different techniques and algorithms in machine learning
- Machine learning in 2018
- Companies and applications that use machine learning

**Outcomes:**

- To better understanding of machine learning
- How machine learning acts as major tool in developing any artificial intelligence
- The evolution of machine learning in data mining, IoT, and other disciplines
- Nowadays how easily users can have machine learning technique-based applications and the beauty of it.

**Faculty Attended:** 11





## Workshop on Robotics Process Automation

A 2 day workshop on **Robotics Process Automation** was conducted on 5<sup>th</sup> and 6<sup>th</sup> October 2018 by Department of Information Science and Engineering, Atria Institute of Technology, Bengaluru.

**Date:** 5<sup>th</sup> and 6<sup>th</sup> October, 28<sup>th</sup> and 29<sup>th</sup> October 2018 at 1.00pm to 3.00pm

**Participated by:** 8<sup>th</sup> semester A sec and B sec students of ISE

**Number of Participants:** 45+35

**Organizer:** Department of ISE, Atria IT, Bengaluru.

**Coordinators:** Prof. Sreenivas B V

**Duration:** 2.00 hours

**Speaker:**

SPEAKER NAME	DAY	SESSION	TOPIC
<b>PROF. Rajendra, Atria Institute of Technology</b>	<b>1</b>	<b>1</b>	<ul style="list-style-type: none"> <li>• Introduction to RPA</li> </ul>
		<b>2</b>	<ul style="list-style-type: none"> <li>• Why RPA</li> </ul>
		<b>3</b>	<ul style="list-style-type: none"> <li>• Importance of RPA</li> </ul>
		<b>4</b>	<ul style="list-style-type: none"> <li>• Role of RPA in various fields</li> </ul>

**Objectives:**

- To introduce the concepts of the RPA
- Introduction to RPA interfaces,
- Overview about Components of RPA
- Understand Trends and Practices

**Outcomes:**

At the end of this workshop, participants were able to:

- Understand the basics of the RPA.
- Able to use RPA services for different applications.
- Able to differentiate between the hardware and software parts used for RPA

## Seminar on Web Technologies and its applications

A technical seminar on **Web Technologies and its applications** was given on July 27<sup>th</sup>, 2018 by **Mrs. Sunitha D** at **Department of IS&E, Atria Institute of Technology, Bengaluru.**

**Title of technical seminar:** Web Technologies and its applications

**Date:** July 27<sup>th</sup>, 2018

**Event conducted for:** Faculties of ISE department

**Speaker Name:**

1. *Mrs. Sunitha D*

**Organization Name:** Atria Institute of Technology

**Duration:** 11:00 am to 12:00 pm

**Attended by:** Faculties of ISE department

**Objectives:**

- **Design and Develop a static and Dynamic web pages.**
- **Familiarize with client and sever programming.**
- **To learn database connectivity with PHP**
- **To learn web technology lab programs.**

**Topics Covered:**

- **Introduction of HTML5**
- **Tags of HTML5**
- **Difference between HTML5 and older version of HTML**
- **Introduction of CSS and its types**
- **Introduction to client and server side scripting.**
- **Installation of Xampp Server**
- 
- **Outcomes:**
- **1. Overview and Concepts of web technologies. *f***
- **2. Learnt about CSS and web design. *f***
- **3. Learnt Client side and server side Programming.**
- 

**Faculty Attended: 06**

## TIPS FROM THE DEPARTMENT:



### *A good internship*

A **great internship** provides the knowledge and skills required to become **successful** in a specific career field. ... Employers spend a **great** deal of time and money on training their new employees, and they know that they can eliminate a lot of this time by hiring someone with previous knowledge and experience.



What tasks do you give an intern?

Here is an awesome list of potential **tasks** that might be perfect for your **interns**.

- Data hygiene projects. ...
- Social media posts and account maintenance. ...
- Social media analytics report. ...
- Meta descriptions and tagging. ...
- Website content SEO clean-up. ...
- QA and user flow testing. ...
- Website content creation. ...
- Custom photo stock.

### **IT/ Software Intern Job Description Sample**

Use the IT intern job description sample below as a template. After customizing the template to fit your company, post the listing on Internships.com to start attracting top candidates.

Internship job descriptions should include location, responsibilities, requirements and qualifications, benefits of the internship (including compensation), schedule and duration, and any additional information about application procedures.

#### **Internship Description**

Engineering company known for innovative technology seeks a self-directed IT intern with a passion for technology, collaboration, and creative problem-solving. The intern will actively contribute to meaningful projects and work closely with a mentor and with senior leadership.

#### **IT Intern Duties and Responsibilities**

- Support the IT team in maintaining hardware, software, and other systems
- Assist with troubleshooting issues and provide technical support
- Organize and maintain IT resources

- Lend IT support in areas such as cybersecurity, programming, analytics, and data centre management

**Requirements**

- Computer Science, Information Technology, or Management Information Systems major
- Minimum GPA of 3.0
- Familiar with Java, .NET, JavaScript or HTML/DHTML and Microsoft Office Suite
- Strong verbal and written communication
- Excellent analytical and problem-solving skills
- Ability to work well in teams
- Strong work ethic and attention to detail

**Benefits**

- Gain hands-on experience in an IT position
- Shadowing and training experiences with knowledgeable professionals
- Opportunity to attend networking events and company meetings
- Flexible schedule for students
- Compensation available



## THE EDITORIAL BOARD:

### *Faculties*

- *Prof. Karitha Vasanth*
- *Prof. Abhilash G*
- *Prof. Omprakash B*
- *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,

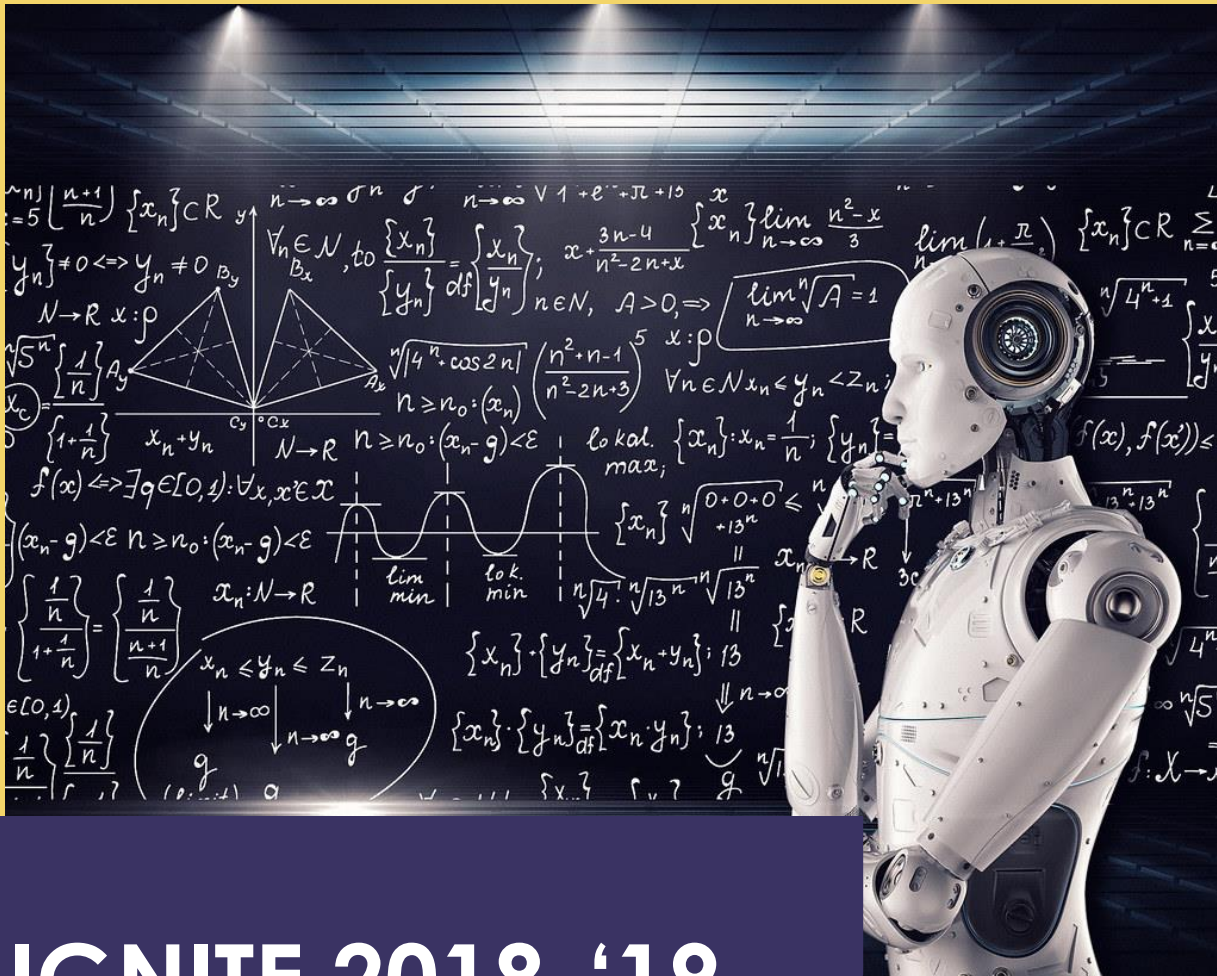
DR. T. N. SRINIVASA , FOR HIS SUPPORT AND ENCOURAGEMENT.

WE WOULD ALSO LIKE TO THANK OUR HOD DR. SHANTHI MAHESH FOR THE INNOVATIVE IDEAS AND 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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**IGNITE 2018-'19**  
Technical magazine

*Thank  
you*

