



Responsible Machine Learning

Abdul Majed Raja RS

*Customer Intelligence at Cisco
Bengaluru*

Machine Learning has grown so much that almost every big enterprise has got an in-house team of Data Scientists and Machine Learning experts. Driven by strong demand in the market and also with increased volume of Data Science courses on MOOC, there is a huge workforce of fresh graduates and career-pivoted experienced professionals entering the domain of Data Science and Machine Learning. While this is a good thing to improve data literacy in an organization, it can lead to certain problems like Data Scientists being naïve at their work. One of those instances is where Data Scientists chasing accuracies (typically, AUC Score) in their projects and in the process, forgetting or disregarding “Data Ethics”. Data Ethics, simply put, is applying ethics in the entire lifecycle of Data Science – starting from Data Collection to Machine Learning modeling.

Responsible Machine Learning is where Data Scientists and Machine Learning Engineers focus on Data Ethics as much as they focus on building a highly accurate ML Solution. Whenever Data Science is



happening in a Social Science context, it is important to check the input data for any Bias that could affect the model outcome. Sensitive features like Gender / Race should be filtered out before Model Building. During Model Building, Proper Cross Validation strategies must be employed to avoid model overfitting. Most importantly, the model needs to be interpreted in Human understandable language to get a clear sense of what is going on with the model and the important variables that are contributing to the prediction and its effects. Often known as, Interpretable ML and Explainable AI are the areas where companies are focusing to establish Responsible Machine Learning. Hence, Practicing Data Scientists and Students (Data Science Aspirants) should start focusing on Responsible Machine Learning for a better society in future.

RANK HOLDERS



Ms. LEENA K S
1st RANK



Ms. JAISHREE V
2nd RANK

2016 - 19 MCA Batch

FACULTY ACHIEVEMENT



Rev. Fr. Augustine George,
Vice Principal

**Congratulations!!!
Awarded Ph.D Degree**

UPCOMING EVENTS

27 - FEB - 2020

Shells 2K20 – Inter-collegiate Fest

19 - MAR - 2020

to

20 - MAR - 2020

ICCTAC '20 - International Conference

5 - MAY - 2020

to

6 - MAY - 2020

National Level Workshop / FDP

Vice Principal's Message

Rev. Dr. Augustine George, Vice Principal

Technology is evolving rapidly. The world is at the cusp of the fourth industrial revolution. This revolution fuses various technologies such as artificial intelligence (AI), the internet of things (IoT), autonomous vehicles, 5G telephony, nanotechnology, robotics, quantum computing and the like. The change is based on the adoption of new technologies for the progressive automation of the production process. It is about innovative technologies whose application to the industry will be developed day by day. Technological advancements are altering the global landscape, and the education sector, particularly higher education are facing challenges in preparing students for the future.

The Department of Computer Science, Kristu Jayanti College aspires to enrich the students learning experience so that they are well prepared to face the challenges of the future. The students are prepared to become leaders in knowledge-driven professions by providing a

conducive learning environment. The college not only uses innovative methods of teaching the curriculum, but also provides opportunities for the students to take part in workshops, conferences, fests and competitions. It gives them a perspective to understand the challenges in the technological world. "Technobytes" biannual newsletter of the department brings to focus all the amazing initiatives taken up by the department to enrich the learning experience of the students. It captures the essence of the atmosphere in the department and also brings to limelight the astounding and meritorious achievements of the students. I appreciate all the endeavors of the Post Graduate Department of Computer Science and wish them all the success in the coming years.



Dean's Message

Dr. Calistus Jude A.L. - Dean, Faculty of Sciences

Our lives nowadays are engineered around computer applications whose innumerable capabilities keep us connected to one another, and permitting the integration of concepts and knowledge between those who otherwise would not be able to come together as a community. Information Technology is the motive force behind every technological advancement of the previous couple of decades. As IT use grows, technology skills are going to be imperative for the students. The ecosystem of the Post Graduate Department of Computer Science provides sufficient and compelling setting for our students to

learn, work together and to involve in research. These activities help our students to imagine, innovate and build the future in this exciting field. The Present issue of Technobytes is brought out with the intend to highlight the activities of the Department and therefore the dynamism of its community. Congratulations to the students and faculty members who have contributed to the content and the team that has brought out yet another issue of Technobytes.



HOD's Message

Dr. Kumar R. - Head, Department of Computer Science

The Department Computer Science-PG offers two programmes Master of Computer Applications (MCA) and M.Sc. Computer Science. MCA programme started in the year 2004 with the objective of imparting technical education to aspiring youth to mold them into professionally competent workforce. It is a three year programme designed to impart conceptual and technical knowledge in the field of computer applications and to nurture Analytical, Logical, design and Implementation skills for Industrial, Academic, Research and Entrepreneurial pursuit.

M.Sc.Computer Science programme, is a two

year Post Graduate degree programme which commenced in the year 2018. The main objective of the course is that the student should

acquire computational skills and be update in latest tools and technologies and it provides a platform for the students to pursue career in academia and industry.

The autonomous curriculum is designed to hone strong software competencies, analytical and problem-solving skills which are essential pre-requisites for a successful software professional.



The course structure and contents are regularly updated as per the latest requirement.

The learning environment is intense and stimulating. The regular academic programme is enhanced by Seminars, Workshops, Personality Development Programmes, Attitudinal Workshop, Soft Skills Training, Tech-Talk Series, Student Seminar Series, Communication sessions, research paper presentations and Aptitude Reinforcement modules. Experts from industry conduct the sessions on a continuing basis. The students have participated in inter-collegiate fest in this semester and won many overalls. The department has very good placement record – this year 18 of our students are already placed in the company Data Semantics Ltd, another 4 students are placed in the company ViCiGi, 3 students in company Three38 Inc. during the odd semester itself.

The students and the faculty members are updated with the latest developments in the industry. As part of knowledge sharing, peer to peer teaching is motivated amongst the students. The academic transactions are rigorous and innovative.

The seventh edition of ICCTAC- International conference on Current trends in Advanced Computing was conducted on 24th January 2019. The papers were published in the Journal of Advanced Research in Dynamical and Control Systems (JARDCS), a Scopus Indexed Journal and BJIT - International Journal of Information Technology, a UGC Indexed Journal published by Spring-

er Nature. IEEE Student Branch of our college under Bangalore Section conducted workshops and tech-talks. National Level Workshop on Cloud service using AWS was conducted on 23rd and 24th August 2019. Students Research Symposium was conducted on 18th September 2019 and the presented papers will be published in the International Journal of Computer Applications (IJCA).

Our department celebrated Yoga Day as part of International Yoga Day. The department had a total of 12 activities in the current semester commencing from June, 2019. As part of the plantation drive initiated by AICTE, “One Student, One Tree”, the department organized a plantation drive near Nagenahalli Village and successfully completed it. The students participated in Computer Literacy Programme and as part of it, they taught the basics of computers to the Government school children of Kannamangala village, Dodballapur taluk. Also to increase the environmental awareness in our students, the department conducted a technical talk on E-Waste management.

Our department is the member of Global IT Commune (GIC). Our college is institutional member of Computer Society of India and all the faculty members are life member of Indian Science Conference.

Faculty members of our department are resource person for various in-house workshops and also in the workshop conducted in other colleges. At present there are 176 students in the department.

Empirical Analysis of Baggage Tracking and Theft Prevention System

Dr. Muruganatham Alagiah



One of the most frustrating situations faced by airline passengers is lost baggage. A long-anticipated vacation or important business trip, missing baggage puts an annoying crimp in any travel plans. However, new research by the International Air Transport Association (IATA) and air transport technology firm SITA shows that RFID technology could save US airlines \$3 billion over a four-year period. The incorporation of RFID would reduce the amount of baggage that is mishandled and lost. This article outlines how RFID can improve baggage tracking, from the check-in counter through the baggage claim carousel. The improved client experience and significant cost savings might explain why Delta Airlines recently invested \$50 million on RFID technology used specifically for baggage tracking. By the end of 2017, all Delta flights were using RFID to track passenger luggage. So far, the program is proving effective, reducing chronic issues such as transfer mishandling, ticketing mistakes, loading errors, arrival mishandling, space-weight restriction issues, load failure, and tagging errors. Using RFID

Embedded Luggage Tags Delta's innovative solution revolved around embedding RFID chips in the existing bag tags already used to track 120 million bags annually. In addition to printed barcodes, the enhanced tags include tiny RFID transponders that enable passengers to follow the real-time whereabouts of their bags among 344 Delta airports, via a downloadable smartphone app. Delta could very well set a precedent in the United States because this program is expected to reduce mishandling by 25%. It has already happened in retail, as RFID is used along every step of the supply chain. It only made sense that it would work with baggage. However, to see a true reduction in mishandled bags, most of the airports around the world would need to deploy RFID technology for baggage tracking. The IATA and SITA study, titled RFID for Baggage Tracking, looks at the potential benefits airlines and airports could experience if they deploy RFID bag track-

Continued...

ing. Of course, the exact savings also depends on the number of people traveling. The good news is that airline travel is always rising. Since 2006, airlines have seen a 5% Increase in passenger trips. In 2015, the number rested at 3.5 billion passenger flights. With at least one bag per passenger, that's a lot of bags and, unfortunately, a lot of mistakes. Resolution 753 to Identify & Monitor Bags In an effort to improve baggage handling by airlines and airports, the IATA responded to perennial passenger complaints by passing Resolution 753 which must be fully enacted to no later than June 2018. The resolution states that every airline must identify and monitor each bag as it passes through routing or transfer points, moves through security screening, is loaded onto the plane, is unloaded from the plane, and is received by the passenger. However, Delta took the first step toward RFID technology among airlines in the U.S. Delta's rollout is the largest of its kind and involves 344 airports, according to SITA.

This could be the point at which other airlines follow. By the end of 2016, Delta already had 25% of its bags being tracked using RFID. In Australia, the airline Qantas has already been using RFID technology to track baggage since 2010 for its domestic flights. Not only is the deployment of RFID baggage tracking about saving money, but passengers expect their luggage is going to make it to its final destination. By making the information

available to them with the app, passengers can see in real-time where their baggage is located. Nonetheless, SITA's report also includes damaged, lost or stolen, and delayed bags. These types of errors typically occur when the luggage is being transferred from one plane to a connecting flight. This is another aspect that can make switching flights a difficult for clients. Without being able to track their luggage, passengers have no idea if it's on the plane with them.

There are further concepts being considered as part of the future of RFID baggage tracking. For example, passengers could purchase a reusable RFID tag that they keep attached to their bags every time they travel. Beyond the airlines' own tracking systems, a third-party app may be used to monitor the location of the luggage. Another possibility is an alert system that would let handling personnel know that a bag isn't in the right place. For example, when a bag moves down a conveyor belt toward the wrong flight a scanner could scan the bags at some point and alert personnel to the misplaced bag, so it could be directed toward the correct flight. SITA is currently working with airlines by studying current conditions so they can be improved backed by 40 Years of Expertise. This article is a pure analysis of baggage theft and various prevention mechanisms which is the implemented as well as the future system.

Kotlin

Prof. Ayshwarya. B

Kotlin is a cross-platform, statically typed, general-purpose programming language with type inference. Kotlin is designed to interoperate fully with Java, and the JVM version of its standard library depends on the Java Class Library, but type inference allows its syntax to be more concise. Kotlin offers big advantages over Java for JVM and Android development, and plays nicely with Java. Google announced official support for Kotlin on Android at Google I/O 2017, and starting with Android Studio 3.0 Kotlin is built into the Android development toolset. Kotlin can be added to earlier versions of Android Studio with a plug-in. Kotlin compiles to the same byte code

as Java, interoperates with Java classes in natural ways, and shares its tooling with Java. Because there is no overhead for calling back and forth between Kotlin and Java, adding Kotlin incrementally to an Android app currently in Java makes perfect sense. The few cases where the interoperability between Kotlin and Java code lacks grace, such as Java set-only properties, are rarely encountered and easily fixed. For choosing Java over Kotlin would be in the case of complete Android development newbies. For them, there might be a barrier to surmount given that most Android documentation and examples are in Java. On the other hand, converting Java to Kotlin

in Android Studio is a simple matter of pasting the Java code into a Kotlin file. For almost anyone else doing Android development, the advantages of Kotlin are compelling. The typical time quoted for a Java developer to learn Kotlin is a few hours—a small price to pay to eliminate null reference errors, enable extension functions, support functional programming, and add coroutines.



In today's world, data and analytics are indispensable to business. Almost all large enterprises have built data warehouses for reporting and analytics purposes using the data from a variety of sources, including their own transaction processing systems and other databases.

Data warehousing is going to be cloud-based. What was unimaginable just a decade ago is no longer the working reality today enterprises are turning to cloud to power and store their data warehouses. It will be versatile, providing both real-time and historical insight. The data warehouse will work in unison with other components of the environment. Information from data warehouses will increasingly be the source of insights for both real-time and analytical actions to provide customer service at the time it's needed, while also serving as a repository for historical data.

There has been rapid growth and excitement in recent months and years in cloud data warehouses hosted by leading internet companies such as Google and Amazon, which is essentially putting a stamp of approval on the concept of data warehouses in the cloud. In addition, traditional cloud providers also offer their capabili-

ties as a cloud service, along with their traditional on-premise products.

Organizations built data warehouses to analyze business activity and to produce insights that enable decision makers to act on and improve business performance and operational effectiveness. Despite the maturity of the market, business intelligence (BI) technology remains at the forefront of IT investment. As more data is created, advances in analytical relational database technology improve BI software.



Student Articles...

Intrusion Detection System

Cyber-attacks are becoming more sophisticated and thereby presenting increasing challenges in accurately detecting intrusions. Failure to prevent the intrusions could degrade the credibility of security services, e.g. data confidentiality, integrity, and availability. Numerous intrusion detection methods have been proposed in the literature to tackle computer security threats, which can be broadly classified into Signature-based Intrusion Detection Systems (SIDS) and Anomaly-based Intrusion Detection Systems (AIDS). The evolution of malicious software (malware) poses a critical challenge to the design of intrusion detection systems (IDS).

Malicious attacks have become more sophisticated and the foremost challenge is to identify unknown and obfuscated malware, as the malware authors use different

evasion techniques for information concealing to prevent detection by an IDS. In addition, there has been an increase in security threats such as zero-day attacks designed to target internet users. Therefore, computer security has become essential as the use of information technology has become part of our daily lives. According to the 2017 Symantec Internet Security Threat Report, more than three billion zero-day attacks were reported in 2016, and the volume and intensity of the zero-day attacks were substantially greater than before.

A Symantec report found that the number of security breach incident is on the rise. In the past, cybercriminals primarily focused on bank customers, robbing bank accounts or stealing credit cards. However, the new generation of malware has become more ambi-

tious and is targeting the banks themselves, sometimes trying to take millions of dollars in one attack. An IDS is a software or hardware system that identifies malicious actions on computer systems in order to allow for system security to be maintained. The goal of an IDS is to identify different kinds of malicious network traffic and computer usage, which cannot be identified by a traditional firewall. This is vital to achieving high protection against actions that compromise the availability, integrity, or confidentiality of computer systems.



SYED FAIZAN ISMAIL
3rd Sem MCA

IoT and Saving lives

The advancement of the technology demands that connectivity is the center of most of the services. Talking about the connectivity, the bridge connecting the connected world or digital world and all the users at the physical



NATHAN KAZAKA
3rd Sem MSc

side is obviously done by some means, called as devices. Quoting Wikipedia, the IoT (The Internet of Things) is the extension of Internet connectivity into physical devices and everyday objects Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors). These devices can communicate and interact with others over the Internet, and they can be remotely monitored and controlled. As per the Garter's Hype Cycle for Emerging Technologies for 2018, the Internet of Things and its derivation tops the highest expected technologies in the next 10 years. IoT devices are being exploited in various domains of day-to-day life, and one of the focus is how these devices are able to save lives in terms of medical emergency. Many implementations such as health monitoring, blood pressure and so on have seen themselves put in application to serve that purpose. It is even stated that "About 4 Million Patients Will Use Remote Patient Monitoring Technologies by 2020". Pertaining to this, one among such ideas raised in our IoT class was to enable not only ambulances with IoT but coordinate them for a better result with traffic signals. The main challenge for ambulances in a highly populated city is obviously the traffic congestion.



address, and internet gateway and cloud front. In the next session, Prof. B. Ayshwarya, spoke about storage services such as S3, glacier, storage gateway, volume gateway and port number selection and training to upload a file to storage RDS and to fetch a file from storage RDS using glacier service. The workshop concluded with very positive feedback from the participants and a congratulatory note by the workshop co-ordinator, Dr. A. Muruganatham.

BLOCKCHAIN TECHNOLOGY:

ALAN RACHEL GEORGE
1st MSC

A Blockchain is a chain of chronological blocks. The term "Blockchain technology" typically refers to the transparent, trustless, publicly accessible ledger that allows us to securely transfer the ownership of units of value using public-key encryption and proof of work methods. The Blockchain is an encrypted, distributed database that records data, or in other words, it is a digital ledger of any transactions, contracts - that need to be independently recorded. One of the key features of Blockchain is that this digital ledger is accessible across several hundreds and thousands of computers and is not bound to be kept in a single place. The Blockchain network has no central authority. Since it is a shared and immutable ledger, the information in it is open for anyone and everyone to see. Hence, anything that is built on the Blockchain is by its very nature transparent and everyone involved is accountable for their actions.

Major Events...

NATIONAL WORKSHOP

Cloud services using AWS

The department of Computer Science (PG) conducted a two-day National Workshop on 23rd and 24th August 2019, sponsored by IEEE student branch. Dr. A. Muruganatham proceeded with a welco-



Photo Session with Workshop Participants

me speech by giving brief introduction about the two resource persons Dr. P Ambika and Prof. B. Ayshwarya from Kristu Jayanti College. The objective of the workshop was emphasized by Dr. Kuamr R, HOD, Department of Computer Science (PG). The first session was handled by Dr. P. Ambika. A brief introduction of Cloud computing was given during the session and it included the need for cloud computing, cloud deployment model, cloud service models and advantages of using cloud infrastructure services with amazon web services. A step by step AWS installation process, key aspects of DSS security, multi-factor authentication and identity

federation were briefed which were very beneficial to the participants. The second was a hands-on session handled by Prof. B. Ayshwarya which included creating an instance in AWS to access the system in a virtual mode in two different environments such as Windows and Linux. The second day of the workshop details was briefed by Dr. P. Ambika. In the session, she gave a brief knowledge about virtual private cloud, benefits, how to create multiple instances, route table between subnets, ACL (access control list), elastic IP address, and internet gateway and cloud front. In the next session, Prof. B. Ayshwarya, spoke about storage services such as S3, glacier, storage gateway, volume gateway and port number selection and training to upload a file to storage RDS and to fetch a file from storage RDS using glacier service. The workshop concluded with very positive feedback from the participants and a congratulatory note by the workshop co-ordinator, Dr. A. Muruganatham.

Alumni Interaction Session

The aim of the session was to give the students an insight on, SAP UI5, Fiori, SAP HANA, XSA, and also about the industrial requirements to hire an employee particularly a fresher. The session started with the introduction of the Guest for - Mr. Ashwin Narayan, HANA XSA Consultant, Utegration LLC, Bengaluru. He started the session with introduction to SAP [Systems or Software, Applications, Products], explaining about how SAP is in trend and the job offers

it provides. Mr. Ashwin discussed about the SAP older version, UI5



[User-Interface 5] which comprises of JavaScript libraries, html, etc., Fiori consisting of guidelines which

are used after developing, SAP HANA [High-performance analytic appliance] which is the Data Warehouse and XSA. He explained the students regarding the placement opportunities, the qualities which an individual must possess to acquire a job and also he shared his experience in college and industry. The session concluded, with an interactive round, which included clearing of many doubts the students had which were answered by the alumni.

International Lecture Series

“Reinventing Computing for a Data-Driven World”

The Department of Computer Science (PG) organized an International Distinguished Lecture on the 3rd of August 2019. The objective was to introduce the complexity of a data-driven world to the student community and to enable them to obtain the resources needed to power and sustain big data explosion. Mr. Dejan Milojevic, Distinguished Technologist, Hewlett Packard Labs, CA, the resource person, emphasized the need for a faster technology and ways to achieve it. The session gave information about the evolution of business and what is driving the data explosion and the different ways to approach the same. Mr. Dejan stated the difference between the Potential Approach vs Distribution Computing approaches and explained how the quality of life would improve public awareness, its influences, and applications of its technologies. Mr. Dejan also stated that programming with multiple virtual memory will add spaces. Using the concepts of threads, data can be transferred faster between components. He mentioned memristor which partially is a combination of register and conductor but has their own func

tions which are different from register, inductors and conductors, and the working of the same using voltage supply. The participants gained information on the data



explosion and need of technology to be secure, manageable with minimal risks to accommodate unprecedented amounts of data, the radical changes by innovating technology in the field of Memory-Driven Computing, AI, Edge and security. The session provided ideas on research projects for the students to relate and understand the concepts and encouraged them to come up with better technology for the betterment of lives in future.

Environmental Awareness : E-Waste Management

Electronic waste or e-waste describes discarded electrical or electronic devices. The Department of Computer Science (PG) conducted a session on Environmental Awareness. Prof. Kumar R, HOD of Computer Science Department of Kristu Jayanti College was the resource person. The objective of the session was to urge the students for the safe disposal of E-waste to reduce the harmful effects and provide tips and instruction for the safe disposal of the same. With the high production of electronic gadgets, as they used electronics which are destined for refurbishment, reuse, resale, salvage recycling through material recovery, or disposal the gadgets are being carelessly dumped around created an impact on the

environment that are harmful to the humans. He then gave instructions to how these



gadgets can be safely disposed after use and only be given to those who are certified E-waste collectors. The session was very useful and informative it brought a new perspective to the students. The session helped the participants gained information on what are E-waste, their impact on the environment and their safe disposal.

Major Events Conducted

Sl. No.	Date of the Event	Title of the event organized	Name of the Resource Person/s with designation
1	29/6/2019	Niche Skill Technologies in Contemporary Hiring Market	Mr. C Babu Ebenezer Sr. Business Associate, Tech Mahindra, Bengaluru
2	6/7/2019	Tech Talk on "Microservices"	Mr. Syam Kakumani Software Architect, Peppy Learning Solutions, Bengaluru
3	20/7/2019	AI for Web development	Ganesan Perumalsamy, Senior Software Engineer, American International Group, Bengaluru
4	3/8/2019	International Distinguished Lecture – Reinventing computing for a data driven world	Dr.Dejan Milojevic, Distinguished Technologist, Hewlett Packard Labs, CA
5	17/8/2019	Effective E-Waste management	Dr. Kumar. R, HOD, Dept of Computer Science (PG)
6	23/8/2019-24/8/2019	National Level Workshop on Cloud services using AWS	Dr. Ambika.P, Prof. Ayshwarya.B
7	18/9/2019	Student Research Symposium	Mr. Sudheendra Koushik, Chief Innovator, PRASU

Congratulations on getting placed!!!

DATA SEMANTICS®
BETTER INSIGHTS SMARTER DECISIONS

Vishnu P

Lincy Joseph

Mohamed Imran S

Md Shaik Fareed

Anto Varghese

Simon Sebastian

Daniel Paul



Mittu Shaji

Juveria Sana

Pavan Kumar

Abishek G

Sumathi M

Kevin Thomas

Achuth P

Md Khasim Riyan

Anuja Thomas



Stephin Stanly

Abin Joseph

Amrutha G

Beula Kumari J

Jincy Johnkutty

Roshine Prakash

Student Achievements



Overall Winners
(Sacred Heart College) (Presidency College, Bengaluru)
Sep 2019



Overall Runners
(Presidency College, Bengaluru)
Sep 2019



Overall Winners
CHRIST (Deemed to be University)
Sep 2019

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