

2018 ICDSE Workshops
07 August 2018

Workshop - I: Data Analytics Using MATLAB

Speaker: Alka Nair, Mathworks, Bangalore

Abstract:

With the rise of analytics in all the industry segments, we see a huge increase in the size and complexity of data collected. Handling and understanding the data, thus, becomes challenging, particularly when the data does not fit in memory. MATLAB® provides a single, high-performance environment for building analytics and makes it easy, convenient, and scalable to analyze and process big data without having to learn big data programming.

In this hands-on session, Application Engineer - Data Analytics & AI, Alka Nair, will cover the following topics:

- Access data of multiple formats
- Preprocess data to extract features
- Choose the appropriate machine learning algorithm

In addition to the above topics, the presenters will also discuss various other aspects in the data analytics workflow including:

- Scaling up the workflow for big data analytics
- Deploying analytics on enterprise and embedded systems

Pre-Requisites:

- Developers to carry their laptops with Matlab installed (trial copy) to work on building skills
- Get the trial copy of Matlab from this webpage:
<https://in.mathworks.com/campaigns/products/trials/targeted/dan.html>

Bio: Alka Nair is part of Application Engineering team at MathWorks focusing on technical computing. She has been working with customers to address their challenges using MathWorks products and services. Her areas of interest include Deep Learning, Autonomous Driving, High performance Computing, Image Processing and Computer Vision. She completed her MS in Electrical Engineering from Indian Institute of Technology, Madras specializing in the area of Image Processing and B.Tech from Calicut University.

Workshop - II: Build Voice-Enabled Experiences with Alexa

Speaker: Sohan Maheshwar, Amazon, Bangalore

Abstract:

Amazon Alexa, the cloud-based voice service that powers Amazon Echo, provides access to thousands of skills that enable customers to voice control their world - whether it's listening to music, controlling smart home devices, listening to the news or even ordering a pizza. This hands-on workshop will take you through the skill-building process starting with an introduction to Amazon Alexa and the Alexa Skills Kit while illustrating why Voice is the next major disruption in computing. You will also learn how the Alexa cloud service works as well as best practices in voice design.

Pre-Requisites:

- Developers to carry their laptops or to be provided with Desktops to work on building skills
- Good to have an Amazon developer account and verified AWS account created in advance, so developers don't spend time doing that in the workshop

. URL's that need to go through

<https://developer.amazon.com>

<https://aws.amazon.com>

<https://github.com/alexa>

<https://alexa.design>

<https://www.amazon.com>

<https://www.amazon.in>

Bio: Sohan is an Alexa Evangelist at Amazon. His role involves inspiring and helping developers build incredible voice experiences using Alexa. He was a part of the Alexa launch in India which has seen developers build over 15,000 skills in a short span of time.

Sohan has presented keynotes in numerous conferences around the world including Great Indian Developer Summit, AI Conclave, Agile India and also Chatbot Summit (Tel Aviv) and Chatbotconf (Vienna).

2018 ICDSE MAIN PROGRAMME SPEAKERS

Speaker:

Jayant Haritsa

Professor

Department of Computer Science and Automation

Indian Institute of Science, Bangalore

Topic: Plan Bouquets: A Fragrant Approach to Robust Query Processing

Abstract:

Declarative query processing with performance guarantees has been a highly desirable but equally elusive goal for the database community over the last five decades. The difficulty stems from two primary sources: errors in the cost models of the execution operators, and errors in the selectivity estimates that serve as inputs to these models. While the former error, which depends on the underlying computing environment, can be curbed to a fair degree, the latter is much harder to control since it is based on data distributions and correlations, which can be arbitrarily complex in nature. The net result is poor query execution plan choices, leading to grossly inflated and extremely unpredictable response times.

In this talk, we present a conceptually new approach to address the selectivity estimation problem, wherein this process is completely eschewed for error-prone selectivities. Instead, a small "bouquet" of plans is identified from the set of optimal plans in the query's selectivity error space, such that at least one among this subset is near-optimal at each location in the space. Then, at run time, the actual selectivities of the query are incrementally "discovered" through a sequence of partial executions of bouquet plans, eventually identifying the appropriate bouquet plan to execute. The duration and switching of the partial executions is controlled by a graded progression of iso-cost surfaces projected onto the optimal performance profile. We prove that this construction results in bounded overheads for the selectivity discovery process and consequently, guaranteed worst-case performance. In addition, it provides repeatable execution strategies across different invocations of a query.

The plan bouquet approach has been empirically evaluated on both PostgreSQL and a commercial DBMS, over the TPC-H and TPC-DS benchmark environments. Our experimental results indicate that, even with conservative assumptions, it delivers substantial improvements in the worst-case behavior, without impairing the average-case performance, as compared to the native optimizers of these systems. Moreover, it can be largely implemented using existing optimizer infrastructure, facilitating easy incorporation in current database engines. Overall, the bouquet approach provides novel guarantees that open up new possibilities for robust query processing.

Bio: Jayant Haritsa is on the faculty of the Department of Computer Science & Automation at the Indian Institute of Science, Bangalore, since 1993. He received a BTech degree from the Indian Institute of Technology (Madras), and MS and PhD degrees from the University of Wisconsin (Madison). He is a Fellow of ACM and IEEE, and a recipient of the Swarnajayanti Fellowship, the Shanti Swarup Bhatnagar Award, and the Infosys Prize.

Speaker:**Asharaf S,**

Associate Professor,
Indian Institute of Information Technology & Management Kerala
Trivandrum, Kerala

Topic: Blockchain for Big Data : Relevance and Applications**Abstract:**

Blockchain technology is a decentralized and distributed public ledger system which was initially proposed by the illusive creator Satoshi Nakamoto as an enabling mechanism for the celebrated crypto-currency Bitcoin. Later on, researchers found that blockchain have huge potential to disrupt many business domains. It is predicted that, in the near future this technology will be adapted by many industries and governmental agencies across the globe creating numerous opportunities. In the above said context, this talk will be examining the relevance and potential of leveraging the blockchain technology in big data problems. The talk will also throw some light into the applicability of a potential blockchain based big data management/analytics infrastructure in both business and governance related domains

Bio: Dr. Asharaf S is an Associate Professor at Indian Institute of Information Technology and Management-Kerala. He is also serving as a visiting faculty in Indian Institute of Space Science and Technology, Trivandrum and as a Mentor in Kerala Startup Mission. He received his PhD and Master of Engineering degrees in Computer Science from Indian Institute of Science, Bangalore. He graduated in Computer Engineering from Cochin University of Science and Technology. After his PhD he has worked with America Online (AOL) and IIM Kozhikode. He is a recipient of IBM outstanding PhD student award 2006, IBM Shared University Research Grant, 2015 and IBM Open Science Collaboration Programme grant, 2017. He has published three books and more than 30 research papers in international journals and conferences. His areas of interest include technologies and business models related to data engineering, machine learning, information retrieval and blockchains.

Speaker:

Sohan Maheshwar,
Amazon Evangelist
Amazon

Topic: It's All in the Data: The Machine Learning Behind Alexa's AI Systems**Abstract:**

Amazon Alexa, the cloud-based voice service that powers Amazon Echo, provides access to thousands of skills that enable customers to voice control their world - whether it's listening to music, controlling smart home devices, listening to the news or even ordering a pizza. Alexa developers use advanced natural language understanding that to use capabilities like built-in slot & intent training, entity resolution, and dialog management. This natural language understanding is powered by advanced machine learning algorithms that will be the focus of this talk.

This session will tell you about the rise of voice user interfaces and will give an in-depth look into how Alexa works. The talk will delve into the natural language understanding and how utterance data is processed by our systems, and what a developer can do to improve accuracy of their skill. Also, the talk will discuss how Alexa hears and understands you and how error handling works.

Target Audience: Data scientists, ML practitioners, Programmers, Product Managers, Experts in conversational interfaces.

Session Pre-requisite: None

Outline/Structure:

- Introduction to voice user interfaces
- Brief overview of how Alexa works (end-to-end)
- How data is used in Alexa's machine learning
- Deep-dive into how intent training works - including statistical matches, unplanned responses and connector words
- Why error handling and prompts matter and how it works
- How entity and slot training works

Learning Outcome: After this session the attendee will have an understanding of:

- Why voice user interfaces are the next major disruption in computing
- How Alexa can understand and respond to a user
- Some of the machine learning behind Alexa's AI systems
- How a developer can use utterance data to improve accuracy of their skill
- What intents, slots and prompts are and why they matter.

Bio: Sohan is an Alexa Evangelist at Amazon. His role involves inspiring and helping developers build incredible voice experiences using Alexa. He was a part of the Alexa launch in India which has seen developers build over 15,000 skills in a short span of time. Sohan has presented keynotes in numerous conferences around the world including Great Indian Developer Summit, AI Conclave, Agile India and also Chatbot Summit (Tel Aviv) and Chatbotconf (Vienna).

Speaker:**Rajeev Mullakkara Azhuvath,**

Digital Consultant,
Enterprise Intelligent Automation (EIA)
Artificial Intelligence Lab (AIL)
Tata Consultancy Services, Kochi, Kerala

Topic: Automation vs Augmentation: The AI Dilemma**Abstract:**

The world around us is changing faster than we can adapt. Many business processes today have human intervention (manual touch points) for its completion. Rapid technological progress in areas like Artificial Intelligence is leading to debates of automation versus augmentation of business processes. There are two schools of thought when it comes to Intelligence. One side sees AI as Augmented Intelligence where humans will be the decision makers. Another sees the exponential technological progress leading to Automated Intelligence where humans will be out of the business process loop in most scenarios.

We are still in the era of Artificial Narrow Intelligence (ANI) where we are limited to problem solving in AI to well defined task boundaries with limited transfer learning. In such a context, it is difficult to achieve Automated Intelligence in every task and we are still limited to Augmented Intelligence. Artificial General Intelligence (AGI) is expected in next couple of decades. It needs to be seen if Automated Intelligence will win provided we are able to achieve AGI. The talk focuses on the augmentation versus automation AI dilemma and its implications to humanity

Bio: Rajeev M Azhuvath is a hands on technologist with 18 years of experience. More than 14 years have been spent developing large scale systems for two of the fortune 100 companies in Financial Services domain. He has performed varying roles as Technical Lead, Technical Architect, Solution Architect, Enterprise Architect, & Chief Architect. The experience involves custom software development using proprietary stack, open source stack, & a hybrid approach as opposed to buy and integrate. The technology exposure spans across mainframes, client server architecture, N-tier architecture, & cloud native applications. It includes development of large applications for enterprise scale and web scale using industry models like Insurance Application Architecture (IAA) & Information Framework (IFW).

Presently he is part of the Artificial Intelligence (AI) Program in TCS. Primary responsibilities include delivery of architecture focused on AI and building capabilities around shallow learning, deep learning, & natural language understanding.

The right mix of consulting experience, delivery experience, servicing experience, research experience, & futurism gives him the unbiased perspective of technology and its impact. Additional areas of interest include advances in Nano Technology, Bio Technology, Information Technology, & Cognitive Science (NBIC). Special interest in Convergence of Technologies & Technological Singularity and its impact to humanity.

Speaker:**Zahida Vaseem,**

Senior Team Lead - Education
Mathworks India, Bangalore

Topic: Are You Ready for AI? Is AI Ready for You?**Abstract:**

AI, or artificial intelligence, is powering a massive shift in how engineers, scientists, and programmers develop and improve products and services. 85% of executives expect to gain or strengthen their competitive advantage through the use of AI, but is AI really poised to transform your research, products, or business?

In this presentation, Business Manager - Strategic Education Institutions, Zahida Vaseem, demystifies AI, challenging you to look for opportunities to leverage it in your work. You will also learn how MATLAB and Simulink® are giving engineers and scientists AI capabilities that were once available only to highly-specialized software developers and data scientists.

Bio: Zahida Vaseem heads the team that is responsible for the proliferation of MathWorks products in educational institutions to help accelerate their academic and research excellence. She has been with MathWorks for the past seven years and in her role has been working with various educational institutions and collaborating in adoption of computational tools. She holds a Bachelor's Degree in Electrical Engineering from Bangalore University and a Post Graduate Diploma in Systems Manager from NIIT, Bangalore.

Speaker:

Bindu Narayan,

Senior Manager

GDS Advisory D&A, EY

Topic: Recommendation Systems and other stories

Abstract:

I will keep my talk focused on how Recommendation Systems are built and how Digital Marketing is done with the help of Data Science. I will touch upon some of the other solutions which I have helped develop in my career and end the talk with current trends in Data Sciences

Bio: Bindu heads the Artificial Intelligence practice in the Data and Analytics Team within GDS Advisory Responsibilities include: Build and expand the AI practice across Service Lines and regions, Institutionalize AI assets, Data Harvester, Intelligent Automation, Develop AI assets, Predicting Cyber Attacks and Intelligent Search