Big Data and Data Analytics

FORE School of Management
New Delhi

Learning Big Data is a Fun

Applications of Big Data & AI transcend Industries. Use of predictive analytics pervades diverse disciplines such as marketing and sales, sports, molecular biology, drug-designing, waste management, finance, healthcare and the list is very long. Smart cities, for example, are the melting pot where variety of big data technologies mesh with one another to transform a city into a semi-intelligent being. In Marketing and Sales, for example, Big Data & AI are fast emerging as a potent tool to gain deeper insights into Customer behavior and thereby act as a strong driver in spurring innovation. In manufacturing, operations managers are employing advanced analytics on historical process data to identify patterns and relationships among discrete process steps and inputs, and then optimize the factors that prove to have the greatest effect on yield. It is a very comprehensive program where we teach interconnected technologies that together constitute Big Data and AI.

The program practically touches the complete expanse of AI. We begin with Machine Learning, then teach Big Data and NoSQL databases as also Streaming data Analytics, and finally GenAI & Deep Learning technologies.

1. Completely hands-on course-- Students work with big data from business & Industry
2. Students experiment with a wide array of industry standard reputed open-source technologies—frequently used in most cloud platforms.
3. Students create knowledge-based products using LLMs on their Laptops.

About the Course

There are five principal modules to the program: The first is the Machine Learning part. We begin with teaching python and its libraries—numpy and pandas. Students get familiar with Big Data, Data Visualization and Data Mining algorithms: In generating this familiarity there is special emphasis on conceptual understanding of techniques rather than on mathematics. Analytics is a creative process and students are encouraged to be creative. Students develop skills to set up predictive models with numerous types of disparate data sets. This is intended to bring home the point that predictive analytics offers a generic set of tools that can be applied on different types of datasets, no matter what be the discipline or the Industry.

The second module is Data Storage Systems. Participants to the course work with several NoSQL databases and Hadoop. We also introduce participants to Data lake.

Streaming data analytics is processing and analyses of data as soon as it is generated. It is analyzing data in motion rather than in batches. For most companies, whether in manufacturing or in services sector, analyzing streaming data is a compulsion to stay competitive rather than an option. For example, for supply-chain services, or taxi-services like that of Uber, the complete business model revolves around analyzing data as soon as it is generated. We cover this subject in sufficient depth.

Generative AI, LLM based models are applied in a number of areas, as content-generation/summarization; developing knowledge based products; Deep Learning is used in image recognition, visual art processing, drug-discovery and toxicology, customer relationship management and recommender systems. From the perspective of engineering, Gen AI & deep learning seek to automate tasks that the human visual system or content generation system can do. Students study and experiment with these technologies in quite detail.

There is a heavy emphasis on projects. Teaching is concept oriented rather than mathematics oriented. Every technique is first explained conceptually and then a project using real world data is executed. Students then undertake a project and publish it on Kaggle, GitHub and HuggingFace. Detailed course syllabus can be downloaded from here.

Program Requirements

It is a cross-discipline course. A participant can be from any discipline. There is no prior requirement of knowing any computer language. We teach python and our projects use python based libraries. Python is easy to learn and to work with. Participants to the program earn PGPM Certificate from FORE. Students must have access to high-speed Internet (generally available now a days) and a lap-top with minimum of 16gb RAM. All software that we will work with are open-source and freely available. Students will also be provided with Virtual machines that have pre-configured software

Program duration and venue

Program duration is 135 hours. Classes can be held online or in class-rooms. In online mode, classes can be held either on appointed weekdays or on Saturdays and Sundays--each class is of 2-hour duration. In class room mode full day classes are held and these can be held at FORE School of Management, New Delhi. We can also have a mix of offline and online classes.

Exercises and Projects

There is a heavy emphasis on exercises and projects. Students must experiment and implement systems themselves. Throughout the course students are to undertake several projects. We encourage students to use their organizational data to solve related problems.

Contacts

For any details please feel free to contact either the Program faculty, Prof Ashok K Harnal, at 8750893093 (WhatsApp) or Prof Asif Zameer, Chair, Executive Education at 9871053303 (WhatsApp).

Program Faculty

Prof. Ashok Kumar Harnal

Ashok Kumar Harnal has worked extensively at multiple facets of Big Data Systems--Machine Learning, Deep Learning & NLP, Big-Data storage systems (Hadoop and NoSQL databases), Graph Databases, Streaming Analytics using Apache Spark, Apache Kafka, Confluent and Reinforcement Learning. He has been teaching Big Data technology since around last twelve years. Since last nine years Prof Harnal has been collaborating closely with University of California, Riverside, in a program on taking sessions on Big Data for Executives from around the World. We have trained officers from several organizations including RITES, NABARD, TechMahindra, Punjab National Bank, Central Bank of India and Union Bank of India Presently we are training officers in one another Bank. What is a matter of pride for us is that many of our students are at very high positions in Industry. We have successfully conducted three programs on Healthcare Analytics; two programs were of three months duration and one of nine months duration. During his stay in Min of Defence, he has executed three country-wide projects on Information Systems: (a) *Raksha-Bhoomi* to computerize land records (as old as 150 years); (b) Knowledge Management of land-title related files/maps in all Defence Estates offices; and (c) Setting up of a Disaster Management organization: Archival Unit and Resource Center (AU&RC), at Delhi and Pune for safe storage of land-title related records in paper and digital forms. He has published two books (both by Tata McGraw-Hill); One on *How to program games on Computers* and the other on *Linux Administration and Applications*. My GitHub site is here.

Prof. Amarnath Mitra

Dr. Amarnath Mitra is working as an Associate Professor in the area of Information Technology and Big Data Analytics at FORE School of Management, New Delhi. Prior to joining FORE, Dr. Mitra worked as Senior Quant Analyst at BioUrja Power LLC (Texas, USA). Dr. Mitra has over five years of industry experience as an analyst and researcher with substantial exposure of working with big & high frequency data and analytics. In academics, Dr. Mitra worked as full-time faculty for over six years in management institutes such as BML Munjal University Gurugram, IMI New Delhi and IBS Hyderabad. As guest/visiting faculty he has taught in several reputed institutions like SIBM Pune, NMIMS Hyderabad, IIIT Bhubaneswar among others. Dr. Mitra has taught subjects like Data Science, Predictive Analytics, Business Analytics, Quantitative Methods, Business Research Methods, Operations Research, Econometrics, among others.

Prof Shilpi Jain

Shilpi Jain is an Area Chair and Professor of Business Administration in the Information Technology & Big Data Analytics area at FORE School of Management. She teaches graduates and executives how to align an organization's business strategy and Information Technology (IT) strategy in a dynamic business environment for achieving financial stability, sustainable growth, and operational efficiency by using scalable & secured technologies and business analytics. She has held research positions in a variety of functional areas. During her stint at Infosys Research Labs, she has designed prototypes for virtual team training platform enabling paired programming, country risk analysis framework, and dynamic resource sharing across geographies. She chairs several executive education programs on e-commerce strategies, managing business on cloud, data summarization, and business storytelling with data. She has been presenting her research in conferences of repute like ICSE, PACIS, AMCIS, and ANZAM. Largely her current research is classified into two domains: 1) studying user behavior on digital channels and 2) team behavior in virtual settings. In the user behavior context, she and her co-authors designed applied and empirical research to explore user behavior on AI Conversational Agents, Social Media channels & e-Commerce, Digital Inclusion at the Grassroots level, and adoption of disruptive technologies. Apart from that she has worked extensively with virtual teams in the organizational setting and crowdsourcing contests. At present, she is a co-chair of a funded longitudinal policy research project which aims to evaluate the impact of internet connectivity in rural India and its influence on the regularization of Rural Telecom ISPs. Prof. Shilpi's research has been published in reputed academic and case research journals, including the Journal of Business Research, Behavior & IT, Ivey Business School, WDI Publishing, ACRC, and ACRJ, amongst others. She has presented her research at several top-tier conferences, such as ICSI, BAM, ICSE, PACIS, AMCIS, and ANZAM. Apart from conducting academic research, she concluded a policy research project titled "Digital inclusion and empowerment in Indian Handlooms In 2018. One of her teaching cases has received a 3rd place win at the WDI 25th Anniversary Case Writing Competition. And received an honorary mention in the Ivey Case Publishing Competition held in 2019.

About FORE School of Management (FSM)

Foundation for Organizational Research and Education (FORE) is committed to the advancement of Management Education, Research, Training and Consultancy. Incorporated in 1981, as a non-profit institution, FORE has been working with industry and academia for developing new domains of managerial thought and education and contributing to building leaders in today's global business environment.

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Located in the heart of South Delhi, FSM provides contextual learning and helps in the development of students as thinking professionals, who have the ability to meet the future challenges of tomorrow's corporate leaders. The programmes develop multiple skills including managerial decision-making, problem-solving, analytical reasoning, communications, creativity, and innovation. FSM has been designing, developing, and conducting innovative Executive Education (EE)/ Management Development Programmes (MDPs) for working executives in India for over three decades.

FSM takes pride in its professional and high-quality faculty, modern infrastructure, technology, and resources- be it in the fields of General Management, Data Science, Human Resource, Finance, Operations, Marketing, Information Technology, Economics, and International Business.

Customized Training Program

These Programs are designed according to the specific needs of the corporate. The pedagogy used in keeping with the background, experience and aspirations of participants as specified.

Long Duration Training Program(LDPs)

Along with the above, FORE does long-duration programs like PGPM (Executive Management program), Big Data Analytics, Marketing Analytics, Healthcare Analytics. These are online or blended programs of 3 months to 11 months.

Open Training Program (OTPs)

FSM Open Training Programs (MDPs) aim to equip business managers with knowledge, skills, and attitudes for effectively responding to global developments and competitive requirements. The emphasis is on developing the ability to apply learnings efficiently and improve decision-making.