Indian Institute of Technology Kanpur

Course Proposal
Indian Technical and Economic Cooperation Programme

Title of the Course/Workshop: **Application of Artificial Intelligence and Machine Learning in Business and Finance**

Item	Details
Title of the Course	Application of Artificial Intelligence and Machine Learning in Business and Finance
Course Coordinators	Prof. Abhinava Tripathi, Department of Industrial & Management Engineering (Correspondence: abhinavat@iitk.ac.in)
Duration	One week
Eligibility Criteria (basic expected background)	Bachelor's degree in Engineering, Science, Economics, or Management with exposure toMathematics and Statistics
Target group	Academics, Undergrad and Master students from Economics/Engineering/Management disciplines, Research scholars, Business analysts from corporate sector, Data Scientists
Tentative dates for the proposed event	Feb. 19 – Feb. 25, 2024
No. of days of training	Days= 6 days, No. of hrs.=36 hrs.
Objectives	Organizations of all kinds need data-driven decision-making to help them improve their processes, identify opportunities and trends, launch new products, and make thoughtful decisions. Rise of artificial intelligence (AI) and machine learning (ML), coupled with availability of Big Data and exponential increase in computing power, have considerably transformed the landscape of data analytics in the world of business and finance. This course introduces the learners to the modern world of data analytics driven by AI & ML approaches through a hands-on curriculum. In this course, you'll learn about the programming language known as R and the integrated development environment (IDE) known as R-Studio. This course does not require any prior data analysis or computer science experience. All you need to get started is basic computer literacy with Microsoft applications (e.g., MS Word, PowerPoint applications), high school level math, and installation of R and R-studio in your system. By the end of this module, you will discover how to use R to conduct predictive analysis in the domains of business and finance with Big Data, using various AI & ML driven techniques such as regression and classification analysis, and finally, Big Data text analytics. This course deep dives into the AI & ML techniques for data analysis that are used to unravel and synthesize Big Data from the business and finance domain.

Prof. Dhirendra S. Katti
Dean
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Tentative list of topics to be covered	1. Big Data Analytics: Fundamentals of R programming, Statistical modelling, inferential statistics, confidence interval estimation, hypothesis testing 2. Exploratory Data Analytics: Data cleaning and data visualization, generating insights from data 3. Predictive Analytics with Linear Regression modelling: Simple and multiple linear regression, residual diagnostics, multicollinearity, heteroscedasticity, etc. 4. Time Series Analytics: ARIMA models, Time series stationarity, Unit roots, Modelling short-term and long-term relationships 5. Panel Data models: Fixed effects and Random effects models, Least Square Dummy Variable models 6. Non-Linear models: Logistic Regression, Quantile Regression, Model Building, and Estimation issues 7. Big Data Text Analytics: Natural Language Processing, Text Mining, Sentiment Analysis, Text corpus visualization, Case study example
Good governance Scheme of GOI being covered	Highlight from below list of GOI schemes: 1. Pradhan Mantri Suraksha Bima Yojana (PMSBY) 2. Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY) 3 Sukanya Samriddhi Account Scheme6. 4. Senior Citizen Saving Scheme 5. Pradhan Mantri Mudra Yojana 6. Atal Pension Yojana (APY)

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