GOVERNMENT OF INDIA
MINISTRY OF POWER

सत्यमेव जयते

एन पी टी आई
NPTI
प्रावीण्यं परोपवृत्तिश्च

Data Sciences and Analytics

A Management Development Program by NPTI, Government of India

Date: 3rd June, 2024 to 7th June, 2024
Venue: NPTI Campus, Faridabad

Duration: 5 days (6 hours each day) Four sessions of 90 minutes each day
Pedagogy: Lectures, Tutorials, Hands on lab session, Capstone Project
Tools: Python and R

APPLY NOW

www.npti.gov.in

About NPTI

National Power Training Institute (NPTI), is organization under Ministry of Power, Govt. of India is a National Apex body for Training and Human Resources Development in Power Sector and the world's leading integrated Power Training Institute, with its Corporate Office at Faridabad. NPTI operates on a Pan- India basis through its Eleven institutes in different power zones of the country located at Faridabad, Badarpur, Nangal, Bengaluru, Neyveli, Allapuzha, Durgapur, Guwahati, Nagpur & Shivpuri. Apart from highly skilled and competent trainers and state of art laboratories, NPTI has Hi-tech real time simulators at its various Institutes. NPTI trained more than 4,50,000 Power Professionals in various training programs over the last 5 decades. NPTI is the only institute of its kind in the world with such a wide geographical spread and covering a wide gamut of academic and training programs in Power Sector.

MDP Objectives

The 5 day program is expected to provide participants an intense but friendly exposure to Data Science methodologies. At the end of the program, participants will have skills to apply the data science methods to solve real life problems, be it in prediction or classification.

We are aware that the data sciences learning process is feared by many professionals/participants. However, if the subject is approached systematically, the science and art of Data Science and Analytics can be learnt quickly by implementing the optimal learning roadmap in a phased way.

At the end of the program, participants will have knowledge/skills to :

- Apply both supervised and unsupervised analytical methods to solve real problems in their specific domains
- Apply analytical methods on real data to predict and prepare forecasts
- Predict class for unlabelled with application of classification methods
- Understand the frameworks of Analytical Modelling and Problem solving
- Conduct model diagnostics and distinguish between good model vs the weak model
- Understand data quality issues and remedials methods for good analytical outputs
- Apply python/R codes and score models

Program Features

- No prior background in statistics or programming is required. This is the beginners course. The course is meant to kickstart the journey to learn analytics – the focus is application of analytical methodologies to solve real world problems of prediction or classification.

- The program is specially designed for both non-engineering students as well as engineering students who do not have exposure to analytics.
- The program is 5 day classroom program delivered at the 15 acre NPTI Headquarters at Faridabad in the NCR region. Participant can avail campus residency on optional basis.
- Course material includes playbooks, Tutorial handouts, shared drive knowledge repository, Exercise files and code. This is hands on course and theory is taught only in context of application.
- The course is suitable for beginners as well as experienced executives.

Content and Topics

Session No.	Topic	Comments
Day 1		
Session 1	Overview – Context of Data Science and Analytics Supervised and unsupervised learning methods Program Overview Skills Roadmap Resources, Course Instructions, Set up	Introductory Sessions Setting expectations How to benefit from the course Set up of personal Computers
Session 2	Data Processing using Python: Using Jupyter Notebooks Introduction to Libraries Data Wrangling and Data Reshaping using Pandas	Lecture and Tutorial
Session 3	Data Visualization: Matplotlib, Seaborn, Plotly	Lecture with Illustrations
Session 4	Practice Session Data Visualization using Matplotlib, Seaborn	Hands on Practice Session
Day 2		
Session 1	Data Pre-processing in Python Importing and Pre-Processing Handling Missing Data Encoding Splitting Data – Training, Testing, Feature scaling	Handling data -getting ready for modelling
Session 2	Prediction – Linear Regression – Simple Regression, Multiple Regression, Multiple Regression with Dummy Variables	Understanding Prediction and forecasting
Session 3	Evaluation of Regression Model Regression Model Selection Stepwise Regression Model	
Session 4	Case Study – Building Predictive Model Exercise	Practice Session - Lab
Day 3		
Session 1	Classification Problem – Logistics Regression	Solving the classification problem
Session 2	Logistics Regression: Evaluating Classifiers performance Confusion Matrix Propensities and Cutoff for Classification	Interpreting the results of logistic regression
Session 3	k-Nearest Neighbour k-NN Classifier	Single Class Multiple Class Setting the cutoff Value Classification Rule
Session 4	Naïve Bayes Classifier- Application of Full Bayesian Classifier	
Day 4		
Session 1	Classification and Regression Trees (CART)	Basics of Ensemble Modelling
Session 2	Random Forest- Best Pruned Tree, Impurity Measures: Gini And Entropy	Bias -Variance Tradeoff
Session 3	Ensemble Modelling : Bagging and Boosting	
Session 4	Practice Example/Lab Session	

Day 5		
Session 1	Cluster Analysis – K means and Hierarchical Clustering – Distance Measures	Clustering
Session 2	Association Rules and Collaborative Filtering	
Session 3	Capstone Project	
Session 4	Capstone Project Solution	

**NPTI reserves the right to modify content as the technology platforms undergo change from time to time.*

Program Fee

INR 35,000/- Residential and INR 25,000/- Non - Residential (+ Applicable GST) per person for participants from India and USD 1500/- for foreign participants (+Applicable GST)

Please Note

- All enrolments are subject to review and approval by the NPTI. Joining Instructions will be sent to the selected candidates 10 days prior the start of the program
- The program fee should be received by the NPTI Executive Education Office before the programme commencement date.
- In case of cancellations, the fee will be refunded only if a request is received at least 10 days prior to the start of the programme.
- A certificate of participation will be awarded to the participants by NPTI.

Pre-requisites

Basic computer familiarity and exposure to Microsoft excel and Microsoft office is needed as a pre-requisite. The pedagogy is application oriented. Participants are expected to bring windows laptops only.

Application Link

The link for applying to the course: **https://forms.gle/rNJHKk49bnDb8sDA9**





Faculty Members

Dr. Mudit Kulshreshtha

NPTI

Dr. Mudit Kulshreshtha has significant academic and industry experience of more than 24 years. He is currently consulting data scientist at NPTI. He has been Professor and Co-director of Center of Excellence for Analytics at Great Lakes Institute of Management, resident faculty at IIM Kashipur and visiting faculty at IIM Lucknow. Earlier he led the Analytics Practices at Deloitte Consulting, Angel One and WNS. He also has significant industry experience as vice president and Head of Analytics and Customer Insights team at PAYBACK, an American Express Company, running analytics for India's largest coalition loyalty program with clients such as Future Group (Big Bazaar), ICICI Bank, eBay and Make MY Trip and Central. The Analytics team headed by Mudit was awarded the 'Best Big Data Analytics Team of the Year' at the Customer Loyalty Summit and Best Use of Customer and Data Analytics in a Loyalty Program in 2017.

He had a significant stint at Deloitte Consulting as Director and Head of Analytics for Region 10 where he also established and ran the M & A Center of Excellence for Deloitte Consulting global clients. He was also Executive Director of the Business Intelligence and Advanced Analytics department at Angel One. Prior to this he was AVP in the Transactions Advisory practice at Ernst and Young. Dr. Mudit has received education at IGIDR, (an advanced research institute of RBI), IIT Delhi and NIT Allahabad, India.

Dr. Gautam Das

NPTI

Dr. Gautam Das completed his Bachelors in Electronics Engineering from NIT Nagpur, MTech in Computer Engineering from IIT Kharagpur and Ph.D. in International Economics, Indian Institute of Foreign Trade (IIFT), Delhi on Foreign Direct Investment. He has also done 'Six Sigma Master Black Belt' an advanced Statistical Analysis course at Indian Statistical Institute.

As a Data Science and Business Analytics thought leader, he has 30+ years of corporate experience in IT, Automation & Data Analytics [Statistical Analysis, Econometrics Modelling], AI & Machine Learning, Big Data Analytics, etc.

He was the Global Head / Chief Data Scientist for Business Analytics Consulting wing at TCS and Senior Data Scientist at IBM. Thereafter he served as Chief Data Scientist at Power Foundation of India – the think-tank of Ministry of Power, Govt. of India. Currently he is CEO and Chief Data Scientist at insAnalytics and Consulting Data Scientist at NPTI.

He has designed industry tuned curriculum and taught Data Science, AI Machine Learning, Business Analytics, Sustainability and Shared Economics at various premier institutes like IIT-Kharagpur, IIM-Calcutta, IIM-Lucknow etc.

Program Coordinators

N. R. Halder, Director (Training), NPTI
98915 37995 | nrhalder.npti@gov.in

Bhawana Chaudhary, Dy. Director, NPTI
93116 22338 | bhawana.npti@gov.in

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