Risk and AI

[155+ hours]

EXCEL + PYTHON

1. CURRICULUM SPECIFIC LEARNING

The curriculum-specific learning will include

- comprehensive **self-paced, chapter-by-chapter** classes covering each topic from the updated RAI curriculum,
- **live sessions** focused on doubt clarification and **intensive question-solving**

Schedule of self paced classes (visible on DTH LMS portal)

- **1.1** Al-Risk Introduction
- **1.2** Introduction of Tools and Techniques
- **1.3** Unsupervised Learning
- **1.4** Supervised - Econometric Models
- **1.5** Supervised - ML
- **1.6** Semi-supervised learning
- **1.7** Reinforcement learning
- **1.8** Supervised learning - Model Estimation
- **1.9** Supervised Learning - Model Performance Evaluation
- **1.10** NLP
- **1.11** GenAI
- **1.12** Responsible & Ethical AI
- **1.13** Risk and Risk Factors
- **1.14** Data and Al Model Governance

Question solving class will be conducted within **1 week** of the delivery of self paced live sessions.

2. ADD-ON Learning- Maths Primers

PEAKS2TAILS

- **2.1.1** Functions
- **2.1.2** Special Functions and Trigonometry
- **2.1.3** Trigonometric functions continued

Functions

- **2.1.4** Multivariable Calculus I
- **2.1.5** Differentiation
- **2.1.6** Optimization
- **2.1.7** Multivariable Calculus II
- **2.1.8** Multivariable Calculus III
- **2.1.9** Multivariable Calculus IV
- **2.1.10** Optimization-Python
- **2.1.11** Integration

Calculus

- **2.1.12** Vector Algebra I
- **2.1.13** Vector Algebra II
- **2.1.14** Vector Algebra III
- **2.1.16** Vectors in 3D
- **2.1.17** Matrix Algebra - I
- **2.1.18** Matrix Algebra II
- **2.1.19** Matrix Algebra III
- **2.1.20** Matrix Algebra IV
- **2.1.21** Linear Algebra with Numpy & Scipy

Linear Algebra

2. ADD-ON Learning-
Applications of algorithms in Python

- **2.2.1** Supervised
- **2.2.2** Semi Supervised
- **2.2.3** Reinforcement Learning
- **2.2.4** Unsupervised
- **2.2.5** Text mining
- **2.2.6** Deep Learning
- **2.2.7** GenAI
- **2.2.8** Multivariable Calculus IV
- **2.2.9** Overfitting
- **2.2.10** ML fairness, bias and interpretability

2. ADD-ON Learning- USE CASES of ML

- **2.3.1** Principal Component Value-at-Risk for Fixed Income
- **2.3.2** Optimizing Credit Limits using Reinforcement Learning
- **2.3.3** Macroeconomic Forecasting using kNN
- **2.3.4** Derivative valuations with Deep Learning
- **2.3.5** Loan Default Prediction
- **2.3.6** Large Language Models as Regulatory Interpretor
- **2.3.7** A sentiment analysis approach to the prediction of market volatility
- **2.3.8** A Machine Learning Framework for Anomaly/Fraud Detection in Payment Systems
- **2.3.9** Model Validation
- **2.3.10** Measuring and Mitigating Racial
- **2.3.11** Disparities in Large Language Model
- **2.3.12** Mortgage Underwriting
- **2.3.13** Accurate PnL Forecasting & VaR estimation
- **2.3.14** Liquidity Risk Forecasting

3. Live Workshops

- **3.1** Traditional Learning
- **3.2** Text Mining
- **3.3** Modern Learning
- **3.4** Prompt Engineering

PEAKS2TAILS

SUMMARY OF CLASSES

Module	Type of Class	Description	Live	Trainer	Delivery date	Deliverables
3	Curriculum specific	Chapter wise class	Self-Paced	Satya	Week by week	Notes
4	Curriculum specific	Question solving class	Live	Karan	Week by week	Q bank
1	Add-on	Maths Primers	Self-Paced	Satya	Available	Notes
2	Add-on	Algorithms in Python	Self-Paced	Satya	Available	HTML
5	Add-on	ML use cases	Self-Paced	Satya	Week by week	HTML
6	Full day Workshops	Excel hands-on for ML	Live	Karan	Every 45 days	Excel
6	Small Workshops	Prompt/ engineering	Live	Megha	Every 2 months	NA

STARTING DATE : 15 JUNE ONWARDS