Institute of Actuaries of India
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November 18th, 2021

ANNOUNCEMENT

MACHINE LEARNING: RE-DEFINING ROLE OF ACTUARIES WEBINAR SERIES 2021

This is further to our notification dated 1st November 2021 on the referred webinar series. It has been noted that, most of the aspirants of this program find it difficult to find time in the morning, hence the timing of the session has been moved to 6.30pm-8.30pm. The starting date of the program also been postponed for a week. To enable more registration, the last date of registration has been shifted to 26th November, 2021.

I. ABOUT THE PROGRAM

It has been quite some time that, Data Science became a key word in the contour of all professions with Machine learning and Artificial Intelligence as important sub-products. While actuaries traditionally involved in decision making on the basis of Mathematical logics and Statistical inferences, advancement of data science is expected to capture most of the actuarial domain with an impact of multiple disciplines like Mathematics, Statistics, Computer science, information science, Machine learning and Artificial intelligence.

The machine learning is an important component for Artificial Intelligence; in a way, machine learning with high level of knowledge and logic touches Artificial Intelligence space. Since Python is largely used in data science as a programming language, the same will be used as the tool for teaching Machine learning as well. Those who have already attended and learned Python from the webinar series recently conducted by the Institute may find this program as the next level of advanced learning. Those who have not attended the Python program may subscribe to the recorded videos to catch up.

Why Actuaries to learn Machine Learning?

The question as to how fast actuaries to catch up various disciplines of data science to be answered sooner than later for maintaining the unique space and role of actuaries in the market. An actuary with specialisation in data science to remain as an actuary for future;

II. PROGRAM SCHEDULE:

Webinars will start on **29th November, 2021** which will be spread over 45 days to be conducted in 20 sessions of 2 hours each duration. Participants are expected to work on assignments on a regular basis to maintain the continuity of learning and practice.

The program schedule is available in **ANNEXURE-I**

*Recorded videos of all webinars will be made available in the member's login page till **28th February, 2022**. However, it is highly recommended to attend all LIVE sessions without fail for optimum learning out of the program.*

III. REGISTRATION:

Registration fee

- ✓ **For Students** : Rupees Five thousand **(₹5,000.00**) only (18% GST extra)
- ✓ **For Associate & Fellow members** : Rupees Seven thousand **(₹7,000.00**) only (18% GST extra)
- ✓ **For Non-members** : Rupees Ten thousand **(₹10,000.00**) only (18% GST extra)
- ✓ Bulk registrations from Employers will be accepted with a minimum registration count of 25, where both members and non-members can together register with a lump sum payment of Rupees Two lakhs (**₹200,000.00)** only (18% GST extra)

- ✓ **Registration menu** : Login to IAI **>>>Machine learning >>**Registration
- ✓ **Registration opens** : On 2nd November, 2021 6.00PM.
- ✓ **Registration closes** : On 26th November, 2021 6.00PM.

IV. FACULTY

Mr. Vamsidhar Ambatipudi, PGDM(IIMI),FIAI,CERA,FRM,PRM

V. COVERAGES AND DURATION:

- Introduction to Machine Learning (ML) (2 Hours)
  - Use cases of classification and regression problems
  - Interaction between various related areas
  - Supervised vs. unsupervised
  - Framework for building ML system (KDD, CRISP-DM, SEMMA)
  - Most commonly used python packages for ML (python eco system)
  - Data Loading
- Fundamentals of ML (2 Hours)
  - Basic Data Preparation (Numerical and categorical data)
  - Basic data visualization
  - Exploratory Data Analysis
  - Data Transformations (Scaling, Standardization, Normalization)
  - Generalization, Overfitting and underfitting
- Understanding classification (10 Hours)
  - Nearest Neighbours
  - Naive Bayes
  - Decision Trees
  - Support Vector Machines
  - Logistic Regression
  - Discriminant Analysis
  - Assumptions and Biases
  - Neural Networks

- Understanding Regression (8 Hours)
    - Linear Regression
    - Regularization
    - Support vector regression
    - Piecewise constant regression
    - Regression trees
- Evaluating and comparing learning algorithms (3 Hours)
    - Bias vs. Variance
    - Resampling Techniques
    - Training, -Validation-Testing
    - K-fold cross validation
    - Leave one out cross validation
    - Evaluating classification algorithms
    - Evaluating Regression Algorithms
- Feature Engineering (4 Hours)
    - Feature selection (Univariate, Recursive, PCA)
    - Scaling
    - Feature construction with kernels
    - Other mechanisms and good practices
- Hyper parameter tuning and working with pipelines (3 Hours)
- Working with ensembles (3 Hours)
    - Bagging (including Random Forest)
    - Boosting
- Unsupervised learning (3 Hours)
    - Clustering (K-means and hierarchical)
    - Association rule mining
- Neural networks in depth (2 Hours)
    - Introduction to deep learning

VI. CONTACT:

Point of contact for all related queries: Mr. Ravindra Mastekar at: ravindra@actuariesindia.org or 022 62433348

ANNEXURE-I

Program Schedule

29th November 2021 to 12th January 2022 ;Time 6.30pm to 8.30 pm

Date	Day	Topic
29-11-2021	Monday	Introduction to Machine Learning (ML)
01-12-2021	Wednesday	Fundamentals of ML
03-12-2021	Friday	Understanding classification -1
06-12-2021	Monday	Understanding classification -2
08-12-2021	Wednesday	Understanding classification -3
10-12-2021	Friday	Understanding classification -4
13-12-2021	Monday	Understanding classification -5
15-12-2021	Wednesday	Understanding Regression -1
17-12-2021	Friday	Understanding Regression -2
20-12-2021	Monday	Understanding Regression -3
22-12-2021	Wednesday	Understanding Regression -4
24-12-2021	Friday	Evaluating and comparing learning algorithms -1
27-12-2021	Monday	Evaluating and comparing learning algorithms -2
29-12-2021	Wednesday	Feature Engineering -1
31-12-2021	Friday	Feature Engineering -2
03-01-2022	Monday	Hyper parameter tuning and working with pipelines -1
05-01-2022	Wednesday	Hyper parameter tuning and working with pipelines -2
07-01-2022	Friday	Working with ensembles
10-01-2022	Monday	Unsupervised learning
12-01-2022	Wednesday	Neural networks in depth