** Foundation for Scientific Research & Technological Innovation (FSRTI)**

**(A Constituent Division of Sri Vadrevu Seshagiri Rao Memorial Charitable Trust)Regd.Office: H.No 13-405, Alkapuri, Hyderabad, 500102, INDIA**

**website: www.researchfoundation.in**

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**Title: A First Course in Machine Learning**

“*Machine Learning is the study of adaptive computational systems that can improve their performance with experience*”.

Machine learning has made dramatic improvements in the past few years, but we are still very far from reaching human performance. Machine Learning (ML)has evolved to mimic the pattern-matching that human brains perform. Today, algorithms teach computers to recognize features of an object. Algorithms for teaching a machine to complete tasks and classify like a human date back several decades. The difference between now and when the models were first invented is that the more information is fed into the algorithms, the more accurate they become. The past few decades have seen massive scalability of data and information, allowing for much more accurate predictions than were ever possible in the long history of machine learning.ML Can be an incredibly beneficial tool to uncover hidden insights and predict future trends.

This course will give you all the tools you need to get started with supervised and unsupervised learning.This course dives into the basics of machine learning using Python, an approachable and well-known programming language. You'll learn about forecasting with regression, supervised vs. unsupervised learning, investigateperformance metrics relates to machine learning, and do a comparison of each.

**COURSE CONTENT**

**Module-1: Introduction to Machine Learning with Python**

Learn the basic concepts of Machine Learning with python, creation of python ML Ecosystem, read, writing and debugging your ML program with various kinds of datasets.

**Module-2: Data Preprocessing**

Learn about data preparation for machine learning with scikit-learn libraries, handling missing value problems, outlier detection, dimensionalreduction and popular models such asTrain/Test Split, Root Mean Squared Error.

**Module-3: Forecasting Numeric Values with Regression**

Learn about simple linear regression, polynomial regression, multiple linear regression and logistic regressions and their applications.

**Module-4: Supervised Learning**

Learn about classification technique. You practice with different classification algorithms, such as KNN, Decision Trees, SVM, and their applications

**Module-5: Unsupervised Learning**

learn about different clustering approaches such as *k*-means, Agglomerative, You learn how to use clustering for customer segmentation, grouping same vehicles.

**Entry level minimum requirements:** Students of Science, Social Sciences, Engineering, Technology, and Researchers of all disciplines Introduction with skill in any programming language such as Python.

**Suggested Textbooks:**

1. Introduction to Machine Learning with Python: *A Guide for Data Scientists,* Andreas C. Müller and Sarah Guido, OREILLY, 2017.
2. Practical Machine Learning with Python A Problem-Solver’s Guide to Building Real-World Intelligent Systems, Dipanjan Sarkar Raghav Bali, Tushar Sharma, ISBN-13 (pbk): 978-1-4842-3206-4.
3. Machine Learning in Action (Vol. 5). Harrington, Peter. Greenwich, CT: Manning New Delhi, India , 2012. ISBN : 978-93-5004-413-1.
4. Machine Learning, Tom ,Mitchell Mc Graw- Hill, New York ,1997, ISBN : 0070428077.
5. Computational Intelligence: Concepts to Implementations. Eberhart, Russell C., and Yuhui Shi. Elsevier, 2007, ISBN : 978-1-55860-759-0.

**Instruction Duration : 3 hrs /Week**

**Total Duration : 16 weeks**

**Fee Chargeable : INR 7000 for students from India US$ 150 for students of other countries**