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Data science, ML and AI course

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This Program is designed to train you in the most promising world of Artificial Intelligence and Machine learning which gives the ability to choose the best algorithm for machine learning along with computer vision, NLP and deep learning as a principle components of artificial intelligence. Use of Python Libraries like NumPy, SciPy and Pandas again justifies Python as a most suitable language for hands-on experience of learning Artificial Intelligence and Machine Learning. Inclusion of R as a programming language interconnects the field of Data Science with AI & ML. Training of AI tools like Keras and Tensor Flow and projects makes the program more industry relevant.

Skills to be Mastered

Advanced Analytics Tools:	NumPy / Pandas.
Artificial Intelligence Tools:	Keras / TensorFlow
Programming Tool:	Python

Prerequisites

Machine Learning Crash Course does not presume or require any prior knowledge in machine learning. However, to understand the concepts presented and complete the exercises, we recommend that students meet the following prerequisites:

- Mastery of intro-level algebra. You should be comfortable with variables and coefficients, linear equations, graphs of functions, and histograms. (Familiarity with more advanced math concepts such as logarithms and derivatives is helpful, but not required.)

- Proficiency in programming basics, and some experience coding in Python. Programming exercises in Machine Learning Crash Course are coded in Python using TensorFlow. No prior experience with TensorFlow is required, but you should feel comfortable reading and writing Python code that contains basic programming constructs, such as function definitions/invocations, lists and dicts, loops, and conditional expressions.

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CURRICULUM

Module 1 - Introduction to DataScience/ML/Artificial Intelligence

- Introduction to Artificial Intelligence
- Applications of AI & Current trends
- Different AI Techniques
- Different Types of AI Agents
- Machine Learning
- Introduction and Applications of Machine Learning
- Supervised and Unsupervised Learning
- Classification & Regression Problem
- Clustering, Anomaly Detection
- Getting started with Linear Regression
- Mathematics behind Linear Regression

Module 2 – Python and its Libraries

- Getting started with python programming
- Installing Anaconda
- Python variables, lists, tuples and dictionaries
- Control Structure in Python
- Defining Functions in Python
- Using modules and packages
- Numpy for Data computation
- Matlplotlib for Data Visualization
- Pandas for data exploration
- Using scikit-learn
- Creating linear regression models using scikit-learn
- Salary Prediction Project

Module 3 - Regression/Classification/Clustering

- K Nearest Neighbor Models
- Using KNN for Data Classification
- Building Models using KNN
- Support Vector Machine
- Using SVM for classification
- Hand written digit recognition project

- Grouping unlabelled items using K-means clustering
  - The k-Means clustering algorithm
  - Clustering Mall Customers project

Module 4 – Artificial Neural Network

- Getting Started with Artificial Neural Networks
- Introduction to neurons, weights
- Activation Function
- Input Layers, Hidden Layers and Output Layers
- Single layer perceptron Model
- Multilayer Neural Network
- Back Propagation Algorithm introduction
- Programming Neural Network using Python
- Building Regression models using ANN
- Classification Examples using ANN

Module 5 - Deep Learning / CNN

- Neural Network Basics
  - Deep Neural Networks
  - Deep Learning applied to images using CNN
  - Tensor Flow for Neural Networks & Deep Learning
- Predicting picture of Dog and Cat trained using CNN

Module 6 - Computer Vision- Face and Eye Detection using Webcam

- Convolutional Neural Networks
- Keras library for deep learning in Python
- Pre-processing image Data
- Live face & eye detection using webcam
- Building models to detect any object
- Object Detection using OpenCV project