## About this course

This Machine Learning with Python course dives into the basics of Machine Learning using Python, an approachable and well-known programming language. You'll learn about Supervised vs Unsupervised Learning, look into how Statistical Modeling relates to Machine Learning, and do a comparison of each.  
  
We'll explore many popular algorithms including Classification, Regression, Clustering, and Dimensional Reduction and popular models such as Train/Test Split, Root Mean Squared Error and Random Forests. 

### What you'll learn

* Supervised vs Unsupervised Machine Learning
* How Statistical Modeling relates to Machine Learning, and how to do a comparison of each.
* Different ways machine learning affects society

**Inside the course, you'll learn how to:**

* Set up a **Python development environment** correctly
* Gain **complete machine learning tool sets** to tackle most real world problems
* Understand the various **regression, classification and other ml algorithms** performance metrics such as R-squared, MSE, accuracy, confusion matrix, prevision, recall, etc. and when to use them.
* Combine multiple models with by **bagging, boosting or stacking**
* Make use to **unsupervised Machine Learning** (ML) algorithms such as Hierarchical clustering, k-means clustering etc. to understand your data
* Develop in **Jupyter (IPython) notebook, Spyder and various IDE**
* Communicate visually and effectively with **Matplotlib** and **Seaborn**
* Engineer new features to**improve algorithm predictions**
* Make use of t**rain/test, K-fold and Stratified K-fold cross validation** to select correct model and predict model perform with unseen data
* Use **SVM** for handwriting recognition, and classification problems in general
* Use **decision trees** to predict staff attrition
* Apply the **association rule** to retail shopping datasets
* And much much more!

Prerequisites and Requirements

**Intermediate Python programming knowledge**, of the sort gained through the [Introduction to Programming Nanodegree](https://in.udacity.com/%22/course/intro-to-programming-nanodegree--nd000/%22), other introductory programming courses or programs, or additional real-world software development experience. Including:

* Strings, numbers, and variables
* Statements, operators, and expressions
* Lists, tuples, and dictionaries
* Conditions, loops
* Procedures, objects, modules, and libraries
* Troubleshooting and debugging
* Research & documentation
* Problem solving
* Algorithms and data structures

**Intermediate statistical knowledge**, Including:

* Populations, samples
* Mean, median, mode
* Standard error
* Variation, standard deviations
* Normal distribution
* Precision and accuracy
* Hypothesis testing
* Problem solving
* Confidence Interval, P-values, T-test, Statistical Significance

**Core Python**

Introduction

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Looping

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Control Statements

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Tuple

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Functions

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Input-Output

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Exception Handling

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OOPs concept

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Regular expressions

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Database

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Networking

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Multithreading

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GUI Programming

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This Machine Learning with Python course dives into the basics of Machine Learning using Python, an approachable and well-known programming language. You'll learn about Supervised vs Unsupervised Learning, look into how Statistical Modeling relates to Machine Learning, and do a comparison of each.  
Look at real-life examples of Machine Learning and how it affects society in ways you may not have guessed!

Explore many algorithms and models:

* Popular algorithms: Classification, Regression, Clustering, and Dimensional Reduction.
* Popular models: Train/Test Split, Root Mean Squared Error, and Random Forests.

More important, you will transform your theoretical knowledge in to practical skill using many hands-on labs.

Get ready to do more learning than your machine!

## COURSE SYLLABUS

##### Module 1 - Introduction to Machine Learning

* Applications of Machine Learning
* Supervised vs Unsupervised Learning
* Python libraries suitable for Machine Learning

##### Module 2 - Regression

* Linear Regression
* Non-linear Regression
* Model evaluation methods

##### Module 3 - Classification

* K-Nearest Neighbour
* Decision Trees
* Logistic Regression
* Support Vector Machines
* Model Evaluation

##### Module 4 - Unsupervised Learning

* K-Means Clustering
* Hierarchical Clustering
* Density-Based Clustering

##### Module 5 - Recommender Systems

* Content-based recommender systems
* Collaborative Filtering