PRAGMATIC DATA COURSES

ESSENTIAL DATA TOOLS | **PRACTICAL MACHINE LEARNING** | ADVANCED MACHINE LEARNING | AI WITH TENSORFLOW

Practical Machine Learning

Predict the future with data

Practical Machine Learning is a hands-on course that teaches students the basics of machine learning by building predictive models using real-world data. Students will learn Python and Scikit-Learn tools to build regression models, classification models and dimensionality-reduction and clustering models that can be utilized in their business. This course gives attendees greater understanding of linear regression, logistics regression, model evaluation metrics, overfitting, cross-validation, and more to improve revenue, reduce costs, create new opportunities and learn foundational skills for this in-demand field.

Who should attend?

Data analysts, economists, researchers, software or data engineers who want to expand their understanding of machine learning with hands-on experience

Key Skills Covered

Python's Scikit-Learn library, building predictive models, solving regression and classification problems, performing dimensionality reduction and clustering

Prerequisites

To achieve the greatest benefit from this course, attendees must take *Essential Data Tools* or possess the following skills prior to attending:

- Basic Python
- Basics of mathematical functions (linear functions, polynominals, etc.)
- Basic linear algebra
- Basic statistics
- Basic calculus

Register for *Practical Machine Learning* or learn more about other courses in our data curriculum by visiting **pragmaticinstitute.com** or calling **480.515.1411**.

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What Students Learn

Over the course, attendees get hands-on experience with practical machine learning techniques that can be used immediately after the training.

PRAGMATIC DATA CERTIFIED

Attendees earn a coveted data science certification upon successful completion of class project

MODULE 1

IN THE FIRST MODULE, students are introduced to the fundamentals of machine learning. This provides them with the foundational knowledge needed to build predictive models that improve business decision making. Students will:

- Gain familiarity with machine learning, supervised learning, unsupervised learning, regression and classification problems
- Train a machine learning model
- Use Scikit-Learn's fit and predict methods to build a linear regression model
- Evaluate trained models using mean squared error and coefficient of determination
- Create new features that encode nonlinearities and use linear regression on an enhanced data matrix
- Build a prediction model using real-world data, and understand how this model can be utilized to achieve business goals

MODULE 2

DURING THE SECOND MODULE, students work on classification, overfitting, variance-bias tradeoff and cross-validation. These programs provide students with the ability to assess information quickly and efficiently to improve revenue, reduce costs and more. Students will:

- Use Scikit-Learn's GridSearchCV to find optimal values for and tune hyperparameters
- Evaluate model performance using appropriate classification metrics
- Identify issues with unbalanced classes and improve model performance
- Include categorical features by using a one-hot encoder
- Build a Scikit-Learn pipeline to predict customer churn
- Understand key concepts including in-sample and out-of-sample errors, variance-bias tradeoff, logistic regression

MODULE 3

ON THE FINAL MODULE OF THE COURSE, students work with a dataset and build a clustering algorithm. These programs further students' knowledge and ensure they can replicate these processes in their own work to enhance business outcomes. Students will:

- Perform principal conponent analysis using Scikit-Learn and build a custom Scikit-Learn transformer to use in a pipeline to transform data
- Use PCA-transformed data to build a K-Means clustering algorithm
- Gain familiarity with metrics for clustering such as silhouette coefficient
- Obtain segments and extract information about each segment using techniques learned throughout the course

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