

Become An ML Pro: Advanced Techniques And Monetization

Course Syllabus



1 My Personal Story

- ⌚ How I Became a Data Scientist and Grew to \$15k per month?
- ⌚ Course Orientation

2 Introduction to Python Programming

- ⌚ Introduction to Python
- ⌚ Control Flow and Loops
- ⌚ Functions and Modules
- ⌚ Object-Oriented Programming
- ⌚ Advanced Topics
- ⌚ Web scraping and data visualisation
- ⌚ Project work

3 Structured Query Language

- ⌚ Introduction to SQL
- ⌚ Basic SQL Queries
- ⌚ Advanced SQL Queries
- ⌚ Data Manipulation
- ⌚ Data Definition
- ⌚ Advanced SQL Topics
- ⌚ SQL for Data Science
- ⌚ SQL in the Real World
- ⌚ Conclusion

4 Scientific Computation - Numpy

- ⌚ Introduction to Numpy
- ⌚ Creating and Manipulating Numpy Arrays
- ⌚ Numpy Operations
- ⌚ Numpy and SQL
- ⌚ Numpy and Data Visualisation
- ⌚ Advanced Numpy
- ⌚ Bonus: Numpy Best Practices and Tips

5 Working with Data - Pandas

- ⌚ Introduction to Pandas
- ⌚ Data Structures in Pandas
- ⌚ Data Wrangling with Pandas
- ⌚ Data Exploration and Visualisation
- ⌚ Data Cleaning
- ⌚ Advanced Pandas Techniques
- ⌚ Bonus: Real-world case studies and examples

6 Visualising Data

- ⌚ Introduction to Data Visualization
- ⌚ Basic plotting with Matplotlib
- ⌚ Customizing plots with Matplotlib
- ⌚ Advanced plotting with Matplotlib
- ⌚ Seaborn
- ⌚ Data Visualization in Pandas
- ⌚ Real-world Data Visualization
- ⌚ Advanced Topics
- ⌚ Conclusion

7 All you need is PROBABILITY & STATISTICS

- ⌚ Introduction to Probability Theory
- ⌚ Degree of Belief & The Law of Large Numbers
- ⌚ Random Variables
- ⌚ Probability Mass Functions
- ⌚ Probability Density Function
- ⌚ Expectation
- ⌚ Central Tendency Measures
- ⌚ Quantiles, IQR, Percentiles & Deciles
- ⌚ Variance In-detail
- ⌚ Covariance In-detail
- ⌚ Distribution in Probability
- ⌚ Hypothesis Testing Introduction

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8 Everything You Need To Know About LINEAR ALGEBRA

- ⌚ Introduction to Linear Algebra
- ⌚ Linear Systems and Matrices
- ⌚ Vector Spaces and Subspaces
- ⌚ Linear Transformations and Matrices
- ⌚ Bonus: Additional Topics

9 The Only Calculus You Need

- ⌚ Introduction to Calculus
- ⌚ Introduction to Differentiation & Integration
- ⌚ Differentiation and It's rules
- ⌚ Basic Idea of Integration
- ⌚ Vector Calculus
- ⌚ Multi-variable Calculus
- ⌚ Bonus: Applications of Calculus in Machine Learning

11 Become a REGRESSION master

- ⌚ Introduction to Regression Analysis
- ⌚ Formulation of Cost Function
- ⌚ Understanding Relationships
- ⌚ Estimating Parameters
- ⌚ Interpreting the Effects of the Parameters
- ⌚ Strategy to find best Parameters
- ⌚ Gradient Descent with Practical Examples
- ⌚ Types of regression
- ⌚ Multiple Linear Regression
- ⌚ Vectorisation of Linear Regression
- ⌚ Hypothesis Testing
- ⌚ Assumptions Test
- ⌚ Model Adequacy Tests
- ⌚ Interpretation of Results
- ⌚ Extensions of Linear Regression - Polynomial Regression, Piecewise Regression
- ⌚ Implementation of algorithms and techniques from scratch
- ⌚ PROJECT: Implementing algorithm to predict EPL results
- ⌚ PROJECT: Building a production level Retail Price Optimisation Engine
- ⌚ PROJECT: Building End-to-End Cancer Death Rate Predictor
- ⌚ Bonus: Interview questions in regression analysis

12 Become a LOGISTIC REGRESSION master

- ⌚ Overview of Classification
- ⌚ Why not Linear Regression?
- ⌚ Introduction to Logistic Regression
- ⌚ The Logistic Model
- ⌚ Loss Function
- ⌚ Estimating the Regression Coefficients
- ⌚ Optimisation Algorithm - Newton Method
- ⌚ Multinomial Logistic Regression
- ⌚ Classification Measures & It's pros and cons
- ⌚ Assumptions of the model
- ⌚ Interpreting model results
- ⌚ Implementation of algorithms from scratch
- ⌚ Building logistic regression model using scikit-learn
- ⌚ Hyper-parameter tuning and model evaluation
- ⌚ PROJECT: End to End System for Credit Risk Analysis
- ⌚ PROJECT: Production grade system for Customer Churn Prediction
- ⌚ PROJECT: Marketing Campaign Optimisation
- ⌚ Bonus: Interview questions on logistic regression

13 Become a GENERATIVE ALGORITHM master

- ⌚ Introduction Generative Models
- ⌚ Difference between Generative & Discriminative Models
- ⌚ Introduction to Linear Discriminant Analysis for Single Predictor
- ⌚ Introduction to Linear Discriminant Analysis for Multiple Predictor
- ⌚ Practical Implementation of Algorithm

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14 Become a NAIVE BAYES' master

- ✓ Introduction to Naive Bayes
- ✓ Bayes Theorem and Naive Bayes Classifier
- ✓ Gaussian Naive Bayes
- ✓ Multinomial Naive Bayes
- ✓ Complement Naive Bayes
- ✓ Bernoulli Naive Bayes
- ✓ Implementing Naive Bayes in Python
- ✓ Applications of Naive Bayes
- ✓ Evaluation Metrics for Naive Bayes
- ✓ Handling Missing Data and Categorical Variables
- ✓ Naive Bayes for Text Classification
- ✓ Advance Topics in Naive Bayes
- ✓ Naive Bayes in Real-world problems
- ✓ Comparison of Naive Bayes with other algorithms.
- ✓ PROJECT: Building End-to-End System for Email Spam Detection
- ✓ PROJECT: Chrome Extension for Sentiment Analysis

15 Must need RESAMPLING METHODS

- ✓ Introduction to Resampling Methods
- ✓ Bootstrapping In-depth
- ✓ Cross-Validation
- ✓ Advanced Resampling Methods
- ✓ Resampling Methods in Practice
- ✓ PROJECT: Implementation of resampling methods

16 The MAJOR Problem & SOLUTION

- ✓ Introduction to Regularisation
- ✓ L1(Lasso) Regularisation
- ✓ L2(Ridge) Regularisation
- ✓ Elastic Net Regularisation
- ✓ Regularisation in Regression Models
- ✓ Regularisation in feature selection
- ✓ Implementation of regularised models

17 Become a FEATURE ENGINEERING expert

- ✓ Introduction to Feature Engineering
- ✓ Methods for Feature Selection
- ✓ Feature Extraction & Transformation
- ✓ Feature Creation
- ✓ Best Practices in Feature Engineering
- ✓ Hands-on exercises and case studies

18 LEARNING THEORY might get you Job

- ✓ Introduction to Learning Theory
- ✓ Bias-Variance Trade-off
- ✓ Other Trade-Offs in Machine Learning
- ✓ Model Validation
- ✓ Hyperparameter Tuning

19 Unleashing the Power of Trees: A Guide to Decision Trees and Ensemble Learning

- ✓ Introduction to Decision Trees
- ✓ Building Decision Trees
- ✓ Random Forest
- ✓ Gradient Boosting
- ✓ Comparison of Decision Trees and Ensemble Methods
- ✓ Case Studies and Hands-on Practice
- ✓ Winning Kaggle Competition

20 Overview of UNSUPERVISED LEARNING & CLUSTERING

- ✓ Introduction to Unsupervised Learning
- ✓ K-Means Clustering
- ✓ Hierarchical Clustering
- ✓ Density-Based Clustering
- ✓ Comparison of clustering algorithms
- ✓ Case Studies and Applications

21 DIMENSIONALITY REDUCTION can Direct you

- ✓ Principal Component Analysis (PCA)
- ✓ Linear Discriminant Analysis (LDA)
- ✓ Non-linear dimensionality reduction techniques: t-SNE, UMAP
- ✓ Comparison of dimensionality reduction techniques
- ✓ Case Studies and Applications

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22 Spooky and Suspicious: A Guide to Hunting Down Anomalies in Your Data

- ⌚ Overview of anomaly detection
- ⌚ Density-based anomaly detection
- ⌚ Distance-based anomaly detection
- ⌚ Statistical-based anomaly detection
- ⌚ Comparison of anomaly detection techniques
- ⌚ Case Studies and Applications

23 Data Science Take Home Challenges

- ⌚ Conversion Rate Optimisation
- ⌚ Multilingual A/B Testing: Spanish Translation Edition
- ⌚ Keeping Employees: An Analysis of Retention Strategies
- ⌚ Detecting Deception: Identifying Fraudulent Activities
- ⌚ Funnel Frenzy: A Study of Customer Journeys
- ⌚ Price Is Right: Examining the Impact of Pricing on Sales
- ⌚ The Power of Marketing: Evaluating the Effectiveness of Email Campaigns
- ⌚ Music to Your Ears: A Challenge to Classify Songs by Genre
- ⌚ Grocery Gems: Clustering and Categorising Food Items
- ⌚ Spending Smart: Analysing Credit Card Transactions