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MACHINE LEARNING BOOT CAMP PART 2: DEEP SKILLS WORKSHOP

Course Code: 840016

Deep Hands-on Core Skills combined with the Latest in AI for Maximum Productivity

Our engaging Machine Learning Essentials Boot Camp is a comprehensive workshop style program designed to provide you with expert level guidance deep diving the latest skills, tools and trends in AI and machine learning, from the ground up. Throughout the program you'll learn how to leverage and apply the latest tech to help you master and transform your data, build efficient models and simplify complex tasks using this innovative tech to your advantage.

This course is typically run as a three-day program, but can also be structured as a multi-week short course event at the convenience of your team or organization. Each program section drills down on a core skill that is fully wrapped with meaningful business examples, data sets, hands-on labs and uses cases focused completely on real-world application. Once you've mastered the essentials skills, we revisit the core topics and apply the latest tools and tech in AI to show you how to maximize efficiency and productivity, saving you countless hours on every project. It's critical to understand the backbone and structure of your work before jumping into leveraging AI tooling, as you need to understand your project input, goals, and desired outcomes in order to use these technologies correctly to create accurate, trusted results.

Throughout the course, you'll explore key skills and concepts including regression analysis, binary and multiclass classification, model performance, generalization, hyperparameter tuning, and feature engineering, among others. You'll also gain practical experience dealing with imbalanced datasets, implementing dimensionality reduction techniques, and understanding ensemble learning methods. The course is rich with hands-on useful labs and group activities that focus on core skills, problem solving techniques and real-world application using data-driven solutions and best practices. You'll leave the course ready to jump into any machine learning project in a meaningful way, able to design, train, evaluate, and fine-tune powerful machine learning models right out of the gate, using the most efficient tools, tech and best practices available today.

What You'll Learn

Our experts help you dive deep into essential tech skills, navigate through challenges, and prepare you to use what you've learned with confidence, and the platform provides you with the path and resources for long term success.

Some of the core topics you'll explore include:

- Regression Analysis: Master the technique to understand and predict the relationship between dependent and independent variables.
- Binary and Multiclass Classification: Learn to categorize data into distinct categories or classes.
- Hyperparameter Tuning: Fine-tune machine learning algorithms to optimize their performance.
- Feature Engineering: Acquire the skill to select and transform variables to improve model accuracy.
- Handling Imbalanced Datasets: Develop strategies to work with datasets where target classes are unevenly distributed.
- Dimensionality Reduction: Grasp methods to reduce the number of random variables and ensure models are efficient.
- Ensemble Learning: Understand how to combine multiple models to enhance prediction accuracy.
- Model Evaluation: Become adept at assessing the performance of machine learning algorithms.
- Python Programming for AI: Gain proficiency in utilizing Python for building AI-driven applications.
- Generalization Techniques: Learn to build models that perform well on unseen data.
- Data Preprocessing: Understand techniques for cleaning, transforming, and normalizing raw data for optimal model training.
- Advanced Algorithms: Dive deep into sophisticated machine learning algorithms to tackle complex data tasks.
- Ethics in AI and Machine Learning: Explore and emphasize the ethical considerations, security and privacy issues in Ai and Machine Learning.
- Using ChatGPT and Other Tools: Using relevant AI tools to increase efficiency and productivity
- Building a Complete AI Driven Application: You'll also have a hands-on experience building an AI app in a capstone project.

Who Needs to Attend

This course is ideally suited for Python developers, data analysts, and aspiring data scientists looking to expand their skills into AI and Machine Learning. It is also highly beneficial for product managers and business leaders aiming to acquire a hands-on understanding of AI's impact on product development and business strategy.

Prerequisites

To ensure a smooth learning experience and maximize the benefits of attending this course, you should have the following prerequisite skills:

- **Python Programming:** Students should have a strong understanding of the Python programming language. This includes the syntax of the language, how to define and use functions, and how to work with Python's built-in data structures like lists and dictionaries.
- **Basic Statistics (helpful but not required):** A foundational understanding of statistics is crucial for many data science concepts. Students should be familiar with concepts such as mean, median, standard deviation, correlation, and the basics of statistical inference.
- **Data Analysis:** Experience with exploratory data analysis, including the ability to manipulate and analyze data, is crucial. This includes skills like cleaning data, investigating distributions and correlations, and creating visualizations.
- **Basic Machine Learning Knowledge:** While the course will likely delve into machine learning in detail, having a basic understanding of what machine learning is and the types of problems it can solve will be useful. This includes familiarity with concepts such as training data, testing data, overfitting, underfitting, and cross-validation.

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VIRTUAL CLASSROOM LIVE	$2,395 USD	3 Day

Virtual Classroom Live Outline

1. **Introduction and Regression**
    1. Understanding the Python ecosystem for data science
    2. Review of Python libraries relevant to data science
    3. Basics of regression analysis
    4. Linear regression in Python
    5. Multiple regression analysis
    6. Hands-on Lab: Regression Analysis with Python
2. **Classification and Cluster Analysis**
    1. Understand and implement binary and multiclass classification.
    2. Implement and assess the quality of a cluster analysis.
    3. Logistic regression for binary classification
    4. Performance metrics for binary classification
    5. Hands-On Lab: Binary Classification
    6. Overview of multiclass classification
    7. Understanding and implementing RandomForest
    8. Hands-On Lab: Multiclass Classification with RandomForest
    9. Introduction to cluster analysis
    10. K-Means clustering in Python
    11. Assessing cluster quality
    12. Hands-On Lab: Cluster Analysis
3. **Model Performance, Generalization, and Hyperparameter Tuning**
    1. Evaluate model performance using relevant metrics.
    2. Understand and implement techniques for model generalization.
    3. Learn about hyperparameters and methods for tuning them.
    4. Understanding confusion matrix, precision, recall, F1 score
    5. ROC and AUC analysis
    6. Hands-On Lab: Model Performance Assessment

7. Understanding overfitting and underfitting
8. Cross-validation for model generalization
9. Hands-On Lab: Model Generalization Techniques
10. Introduction to hyperparameters and their importance
11. Grid search and random search for hyperparameter tuning
12. Hands-On Lab: Hyperparameter Tuning with Python

4. **Model Interpretation, Dataset Analysis, Data Preparation**
    1. Learn techniques for interpreting model coefficients and understanding feature importance.
    2. Hands-On Lab: Machine Learning Model Interpretation
    3. Techniques for data exploration and visualization
    4. Learn methods for data exploration, visualization, univariate, and multivariate analysis.
    5. Hands-On Lab: Dataset Analysis with Python
    6. Dealing with missing values
    7. Outlier detection and handling
    8. Encoding categorical variables
    9. Hands-On Lab: Data Preparation with Python
5. **Feature Engineering, Imbalanced Datasets, Dimensionality Reduction, and Ensemble Learning**
    1. Learn techniques for feature engineering and handling imbalanced datasets.
    2. Understand and implement dimensionality reduction techniques.
    3. Hands-On Lab: Feature Engineering and Dimensionality Reduction
    4. Learn about ensemble learning methods and their implementation.
    5. Implementing ensemble learning methods
    6. Hands-On Lab: Ensemble Learning with Python
6. **Capstone Project / Workshop**
    1. Students will build their own AI investor using Python. Students will gain an understanding of the stock market approach from a purely data driven perspective, and will use that to build a stock investor. Students will be able to customize the investor (aggressive or defensive).
    2. Hands-On Lab: Project Workshop
    3. Apply learned techniques to a given problem statement.
    4. Understand how to troubleshoot and improve model performance.

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PRIVATE GROUP TRAINING	3 Day

Visit us at www.globalknowledge.com or call us at 1-866-716-6688.

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