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TEMARIO

AI+ Developer™ (40 hours)

Course: AI+ Developer™ (40 hours)

AI+ Developer™ training program offers a comprehensive journey through the key domains of artificial intelligence, specifically tailored for developers. From mastering Python fundamentals to advanced concepts, mathematics, statistics, optimization techniques, and deep learning, this program equips developers with indispensable skills. The curriculum encompasses data pre-processing, exploratory data analysis, feature engineering, selection, and dimensionality reduction.
Additionally, participants can specialize in NLP, computer vision, or reinforcement learning. The program also covers time series analysis, model explainability, and the intricacies of model deployment. Upon successful completion, you'll be awarded a certification acknowledging your proficiency in these pivotal artificial intelligence areas, positioning you as a well-prepared developer ready to tackle real-world AI challenges and innovations.

Objectives

- Understand the essentials of AI and gain proficiency in Python for AI development.
- Learn the architectures of deep learning and neural networks and their applications.
- Explore various specialized AI applications across different industry sectors.
- Acquire knowledge about large language models, including GPT, and master the art of prompt engineering.
- Develop the skills to utilize AI tools, manage AI operations, and effectively deploy AI models in real-world scenarios.

Target Audience

- AI Engineer
- Software Developer
- Programmer

Prerequisites

Required:

- Experience dabbling in coding, preferably in common languages like Python or Java.
- Basic understanding of Machine Learning and how computers process data.
- Introductory knowledge of Neural Networks and their foundational concepts.
- Familiarity with language processing tools and introductory chatbot concepts.
- Understanding of how AI processes and interprets images.
- Insight into AI learning techniques and continuous improvement methods.
- Experience or knowledge in deploying AI solutions and presenting them to an audience."

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Modulo 1: Python Basics

Learning objectives

- Data Types
- Variables and Assignment
- Operators
- Control Flow
- Functions and Arguments
- Strings and Methods
- Data Structures
- Modules and Importing
- File IO
- Exceptions and Error Handling

Modulo 2: Python Advanced

Learning objectives

- ObjectOriented Programming
- Decorators
- Generators and Iterators
- Lambda Functions
- Regular Expressions
- Debugging and Testing
- MultiProcessing amp MultiThreading
- Essential Libraries for Data Science
- Working with Databases
- API Development
- Package Creation and Distribution
- Performance Optimization and Profiling
- Design Patterns

Modulo 3: Mathematics for Machine Learning

Learning objectives

- Linear Algebra
- Matrix Operations
- Vector Spaces
- Eigenvectors and Eigenvalues
- Linear Transformations in Python
- Matrix Factorization
- Introduction to Tensor Operations in Linear Algebra

Modulo 4: Calculus

Learning objectives

- Differential Calculus
- Integration in Python

Modulo 5: Probability for Data Science

Learning objectives

- Probability Basics
- Calculating Basic Probabilities
- Probability Distributions Normal Binomial Poisson
- Conditional Probability
- Monte Carlo Simulation
- Central Limit Theorem
- Statistical Inference in Probability
- Probability in Machine Learning Algorithms
- Decision Making Under Uncertainty
- Realworld Applications of Probability in Data Science

Modulo 6: Statistics for Data Science

Learning objectives

- Introduction to Statistics for Data Science
- Descriptive Statistics
- Probability and Distributions
- Statistical Inference

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Modulo 7: Optimization Techniques in Data Science

Learning objectives

- Introduction to Optimization in Data Science
- Gradient Descent
- Stochastic Gradient Descent
- Adaptive Learning Rate Methods

Modulo 8: Introduction to Machine Learning

Learning objectives

- Machine Learning Basics

Modulo 9: Introduction to Deep Learning

Learning objectives

- Deep Learning Basics

Modulo 10: Introduction to Reinforcement Learning

Learning objectives

- Reinforcement Learning Basics

Modulo 11: Evaluation Metrics

Learning objectives

- Introduction to Evaluation Metrics in Machine Learning
- Classification Metrics
- Regression Metrics
- Importance of Multiple Metrics
- Choosing Metrics Based on Business Context
- Evaluating Metrics on Test Set

Modulo 12: Data PreProcessing

Learning objectives

- Explanation of the Topics
- Data Cleaning
- Data Transformation
- Feature Engineering
- Feature Selection
- Data Reduction

Modulo 13: Exploratory Data Analysis EDA in Python

Learning objectives

- Introduction to EDA in Python
- Importing and Loading Data
- Data Cleaning
- Univariate Analysis
- Bivariate and Multivariate Analysis
- Data Transformations and Encodings
- Identifying Outliers and Anomalies
- Tools for EDA in Python
- The Iterative Nature of EDA

Modulo 14: Feature Engineering

Learning objectives

- Introduction to Feature Engineering
- Feature Creation
- Feature Selection
- Feature Extraction
- Feature Scaling
- Missing Value Imputation
- Discretization
- Feature Encoding

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Modulo 15: Feature Selection

Learning objectives

- Filter Methods
- Wrapper Methods
- Embedded Methods

Modulo 16: Dimensionality Reduction

Learning objectives

- Introduction to Dimensionality Reduction
- Problems with HighDimensional Data
- Benefits of Dimensionality Reduction
- Common Techniques
- Key Takeaways and Best Practices

Modulo 17: Data Visualization

Learning objectives

- Introduction to Data Visualization
- Types of Data Visualization
- Categories of Visualizations
- Popular Types of Visualizations
- Key Takeaways and Best Practices

Modulo 18: Supervised Machine Learning Algorithms

Learning objectives

- Introduction to Supervised Learning Algorithms
- Common Tasks in Supervised Learning
- Popular Algorithms

Modulo 19: Unsupervised Machine Learning Algorithms

Learning objectives

- Introduction to Unsupervised Learning Algorithms
- Types of Unsupervised Learning Algorithms

Modulo 20: Boosting Algorithms

Learning objectives

- AdaBoost Algorithm Explanation
- XGBoost Algorithm Explanation
- CatBoost Algorithm Explanation
- GradiendBoost Algorithm Explanation

Modulo 21: Working with Imbalanced Data

Learning objectives

- Sampling Methods
- Algorithm Modifications

Modulo 22: Hyperparameter Tuning

Learning objectives

- Introduction to Hyperparameters
- Hyperparameter Tuning Techniques
- Challenges in Hyperparameter Tuning
- Strategies for Efficient Tuning
- Tools for Hyperparameter Tuning

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Modulo 23: Timeseries

Learning objectives

- Introduction to Time Series Data
- Key Aspects of Time Series Analysis
- Stationarity and Autocorrelation
- Time Series Forecasting
- Time Series Models
- Visualization in Time Series Analysis
- Key Takeaways and Best Practices

Modulo 24: Deep Learning

Learning objectives

- Neural Networks
- Activation Function
- Loss Functions
- Optimizers
- Regularization
- Forward Propagation
- Backward Propagation
- Hyperparameter Tuning in Neural Networks

Modulo 25: Specialization

Learning objectives

- NLP
- Computer Vision
- Reinforcement Learning

Modulo 26: GenAI

Learning objectives

- Introduction to Supervised Learning Algorithms
- Common Tasks in Supervised Learning
- Popular Algorithms

Modulo 27: Explainable AI

Learning objectives

- Explanation of the Topics
- Explainable Modeling
- ModelAgnostic Methods
- Interactive Explanations
- Explainable Deep Learning
- Visual Explanations
- Natural Language Explanations

Modulo 28: Model Deployment

Learning objectives

- What is Model Deployment
- Key Steps in Deploying a Model
- Challenges with Model Deployment
- Best Practices

Contacto

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