AI: Evolution, Understanding, Applications, and Programming

Module 1: Introduction to Artificial Intelligence

- Overview and Presentation with Q&A (1.5 Hours)
- Definition and Evolution of AI:
  - Terminology and Evolution
  - From Early Algorithms to Neural Networks
  - Deep Learning and Generative AI
  - Narrow AI, Artificial General Intelligence, and Superintelligence
  - Examples of Applications Across Various Fields
  - Factors Supporting AI:
  - Algorithmic Structures and Heuristics
  - Hardware Components: CPUs, GPUs, and TPUs
  - Programming Languages: R, Python, C++, Rust, and Mojo
  - Software and Frameworks
- Machine Learning Overview:
  - Main Categories of Models
  - Supervised and Unsupervised Learning
  - Applications and Fields of Use
- Deep Learning Overview:
  - Differences Between Deep Learning and Machine Learning
  - Concepts and Models
  - Applications and Fields of Use
  - Specific Characteristics of Natural Language Processing
- Generative AI Overview:
  - Language, Image, and Multimodal Models
  - Applications and Products Available on the Market
  - Example: Google Gemini
- Issues and Risks:
  - Ethics and Bias
  - Privacy and Environmental Impact
  - Risk of Dystopian Outcomes

Module 2: Artificial Intelligence Demonstrations

- Overview and Presentation with Q&A (1.5 Hours)
- DevOps and AI Pipelines:
  - Data Preprocessing
  - Training and Optimization
  - Deployment
- Machine Learning in Practice:
  - Demonstration with Scikit-Learn
  - User-Friendly Approach with PyCaret

    - Note: Source Code Provided Through Google Colab
    - Deep Learning in Practice:
    - Demonstration with NumPy
    - Using PyTorch
    - Note: Source Code Provided Through Google Colab
- Generative AI:
    - Exploring Large Language Models and Multimodal Models
    - Fine-Tuning and Autonomous Agents
    - Note: Practical Work with Google Gemini in the Following Module

Module 3: Using Google Gemini

- Hands-On Experimentation with Google Colab (3.5 Hours)
- Using the Chatbot:
    - Writing Simple Prompts
    - Tips for Python and Other Programming Prompts
- Using the Python API:
    - Designing Advanced Prompts
    - Code Optimization and Unit Testing
- Using Google AI Studio:
    - Fine-Tuning and Retrieval-Augmented Generation
    - Building an Autonomous Agent
    - Experimental Projects with Python and Other Languages

Follow-Up Training with OpenAI

OpenAI Training for Developers