Fundamentals of AI—ICAgile Certification (ICP-FAI)

Unravel the complexities of machine learning in a way that's approachable for everyone, regardless of technical background. In Fundamentals of AI, participants embark on a journey through the world of AI & machine learning, understanding not only the what but the why and how behind this transformative technology.

Rather than diving deep into complex algorithms, this course takes a practical approach to machine learning. Participants engage in hands-on activities and discussions that showcase the real-world applications of machine learning in various industries including healthcare, finance, recommendation systems, and more.

Key takeaways from this class include:

- Breaking down the notion of machine learning into simple, relatable terms, offering a glimpse into how machines learn from data.
- Understanding the types of machine learning and their impact on everyday life.
- Demystifying machine learning algorithms by explaining their functions using familiar examples.
- Understanding critical ethical considerations like biases, fairness, and the responsible use of AI.

By the end of this course, participants emerge equipped with a clear understanding of the fundamental principles of machine learning, enabling them to engage in informed discussions and make sense of the pervasive role of this technology in our rapidly evolving world.

Course Completion and Certification
Upon completion of this course the attendee will be certified by the International Consortium for Agile (ICAgile) and awarded the ICAgile Professional - Fundamentals of AI (ICP-FAI) designation. The ICAgile certification fee is included with your registration for your convenience.

About the ICAgile
The International Consortium for Agile's goal is to foster thinking and learning around agile methods, skills, and tools. The ICAgile, working with experts and organizations across agile development specialties, has captured specific learning objectives for the different agile development paths and put them on the learning roadmap. For more information visit www.icagile.com.

Who Should Attend
This class is for anyone, technical or non-technical, who wants to understand the applicability of machine learning to everyday life. It is also for anyone who wants to learn the basics of machine learning and how to interact with Generative AI tools such as ChatGPT or Windows Copilot.

Course Outline

Session 1: Introduction to Machine Learning

- Definitions of AI, ML, LLM, and deep learning
- Importance and applications of machine learning
- Overview of the machine learning workflow
- Model interpretation and explainability
- Ethics and bias in machine learning
- Environment setup for hands-on exercise
- Exercise #1: AI Fact or Fiction?

Session 4: Neural Networks and Deep Learning

- Introduction to artificial neural networks
- How these networks work
- Feedforward and back propagation
- Deep learning and large language models (LLM)
- Key deep learning architectures (FNNs, CNNs, RNNs, GANs)
- Transformer architectures
- Fine-tuning existing models

Session 2: Understanding the Machine Learning Process

- Overall development process
- Data engineering
- Model selection, training, and validation
- Testing and deployment
- Operation, monitoring, retraining
- MLOps
- Exercise #2: Quiz on ML process

Session 3: Types of Learning

- Types of machine learning (supervised, unsupervised, reinforcement)
- What is supervised learning?
- Classification vs. Regression
- Decision trees and random forest examples
- Model evaluation and metrics (accuracy, precision, recall, F1-score)
- Exercise #3: Real-world example - classifying images
- What is unsupervised learning?
- Clustering algorithms (K-Means, Hierarchical, DBSCAN) examples
- Dimensionality reduction (PCA, t-SNE)
- Exercise #4: Real-world example - using clustering
- What is reinforcement learning?
- Reinforcement learning approaches
- Exercise #5: Real-world example - Using reinforcement learning
- Exercise #6: Leveraging pre-existing models

Session 5: Generative AI and Prompt Engineering

- What is Generative AI?
- Application of Generative AI
- Understanding prompt engineering
- Using prompt engineering techniques
- Prompt engineering best practices
- Demonstration of Google Gemini
- Demonstration of GitHub Copilot
- Exercise #7: Creating good prompts with ChatGPT

Exercise #8: Putting it all together

Wrap up & Next steps

- Recap of key concepts and skills learned
- Course evaluation
- Resources for further learning (books, online courses, communities)
- Thank you!