

**AI Engineering
Summer Camp
Accelerator Program**

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AI Engineering

An AI engineer designs, develops and implements artificial intelligence solutions to solve complex problems and optimize processes across various industries, leveraging machine learning, deep learning, and other AI technologies to drive innovation and efficiency. They are responsible for creating algorithms, training models, and deploying AI systems that enhance decision-making, automation, and customer experiences

Associate Level

Foundations of Machine Learning & Deep Learning

Foundations of machine learning and deep learning form the basis of understanding and implementing advanced algorithms for various applications.

Key Competencies Overview

- Introduction to Machine Learning
- Supervised Learning
- Unsupervised Learning
- Introduction to Deep Learning

Module 1: Introduction to Machine Learning

- What is Machine Learning?
- Types of Machine Learning (Supervised, Unsupervised, Reinforcement Learning)
- Basic Terminology and Concepts

Module 2: Supervised Learning

- Linear Regression
- Classification Algorithms (Logistic Regression, Decision Trees, Random Forests)
- Model Evaluation and Metrics

Module 3: Unsupervised Learning

- Clustering Algorithms (K-Means, Hierarchical Clustering)
- Dimensionality Reduction (PCA, t-SNE)

Module 4: Introduction to Deep Learning

- Basics of Neural Networks
- Introduction to TensorFlow and Keras
- Building and Training Simple Neural Networks

Generative AI Specialization

Generative AI Specialization focuses on the principles, techniques, and applications of generative artificial intelligence.

Key Competencies Overview

- Fundamentals of Generative AI
- Prompt Engineering
- Fine-Tuning Pre-trained Models
- Retrieval-Augmented Generation (RAG)
- Advanced Topics in Generative AI

Module 1: Fundamentals of Generative AI

- What is Generative AI?
- Key Concepts and Techniques

Module 2: Prompt Engineering

- Designing Effective Prompts
- Techniques for Prompt Optimization
- Hands-on Exercises with Prompt Engineering

Module 3: Fine-Tuning Pre-trained Models

- Introduction to Transfer Learning
- Fine-Tuning Techniques
- Case Studies and Examples

Module 4: Retrieval-Augmented Generation (RAG)

- Introduction to RAG
- Implementing RAG in Python
- Applications and Use Cases

Module 5: Advanced Topics in Generative AI

- Ethical Considerations
- Future Trends and Developments

Consultant Level

Microsoft Azure AI Engineer Associate

Designing and Implementing an Azure AI Solution exam. Designing and implementing AI solutions on Azure, including natural language processing, computer vision, and machine learning workloads.

Key Competencies Overview

- Analyzing Solution Requirements
- Designing AI Solutions
- Implementing and Monitoring AI Solutions
- Optimizing AI Solutions

Module 1: Analyzing Solution Requirements

- Gather and analyze customer requirements.
- Identify data sources.
- Identify security and compliance requirements.
- Recommend Azure AI solutions based on requirements.

Module 2: Designing AI Solutions

- Design AI solutions.
- Design solutions that include one or more pipelines.
- Design solutions that use knowledge mining to ingest and query data.
- Design solutions that analyze text using Azure Cognitive Language Services.
- Design solutions that analyze images and video using Azure Cognitive Vision Services.
- Design solutions that process data using Azure Cognitive Speech Services.
- Design solutions that implement conversational AI.

Module 3: Implementing and Monitoring AI Solutions

- Create AI models.
- Train machine learning models using Azure Machine Learning.
- Train models with automated machine learning.
- Train models with custom code.
- Train models with no-code.
- Train models using reinforcement learning.
- Validate AI models.
- Deploy and manage models.

Module 4: Optimizing AI Solutions

- Evaluate models.

- Optimize and manage models.
- Monitor models.
- Optimize and manage pipelines and experiments.
- Optimize compute resources for a solution.

Get Career Ready

Prepare For Soft Skills

- LinkedIn Profile Building
- Resume Writing
- Communication skills as per industry needs
- Analytics skills
- Time management

Job Roles

- AI Engineer
- ML Engineer
- Data Scientist