AI Fundamentals Training

BILGINC IT Academy
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Duration: **2 Day**

Overview

Apply prompt engineering techniques to automate and optimise real-world workflows.

This course is designed for **developers, specialists, and security professionals** who want to explore artificial intelligence in a practical way.

Participants take part in **hands-on labs using live AI tools such as ChatGPT, Copilot, and other modern AI platforms**.

AI Fundamentals is a practical and comprehensive **two-day training programme** for anyone who wants to understand how artificial intelligence can be applied to everyday work.

Throughout the course, participants explore how AI assistants work, where they can be used, and how they can transform workflows and business processes. The programme covers the wider AI landscape, prompt engineering, generative AI tools, and practical real-world use cases.

Through hands-on exercises, learners experiment with different AI tools for tasks such as content generation, data analysis, document interaction, workflow optimisation, and automation of routine activities.

The goal of the course is to help participants confidently navigate the rapidly evolving AI ecosystem, choose appropriate tools, understand the limitations of AI-generated outputs, and apply AI effectively in daily professional environments.

Prerequisites

There are no formal prerequisites for this course.

The programme is designed for learners at a fundamentals level and requires only general IT knowledge.

Who Should Attend

This course is particularly suitable for:

- Developers who want to understand AI concepts and practical applications
- Individual specialists looking to optimise workflows with AI tools
- Security professionals interested in the role of AI in cybersecurity and risk management

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What You Will Learn

By the end of the course, participants will be able to:

- Understand the AI landscape, AI assistants, and prompt engineering fundamentals.
- Apply AI in practical exercises and real-world case studies.
- Use AI tools to improve workflows and content generation.
- Develop the confidence and skills needed to navigate and make effective use of the AI ecosystem.

Outline

Day 1

Module 1: The AI Landscape

Welcome to the AI Revolution

- Is AI really magic?
- Why learn the fundamentals of AI?
- The Jagged Frontier: Centaurs and Cyborgs
- A short history of AI
- Possible futures of AI
- What is AGI?
- What should you expect to take away from the course?

Basic Concepts

- Core building blocks of AI
- Models
- Prompts
- Tokens
- Completions

Exercise: Introduction to OpenAI ChatGPT

- Exploring ChatGPT with a simple question

Other Chatbots

- Alternatives to ChatGPT
- How can AI models be compared?

AI in Everyday Applications

- Understanding how AI already appears in everyday tools and services

Pragmatic AI

- The risks associated with emerging technologies
- Why critical thinking remains essential

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Demo: Midjourney

- Use cases
- Available options
- Stylisation
- Practical examples participants can try

Behind the Technology

- Developing better intuition about how AI systems work

A Friendly Introduction to Neural Networks

- General purpose and structure
- Input layer
- Hidden layers and weights
- Output layer

Behind the Technology: Large Language Models

- What is an LLM?
- Predicting the next word
- How probabilities are generated
- Word n-grams
- Temperature
- Transformer architecture
- What is a GPT?
- Why ChatGPT is more than an LLM
- OpenAI Playground

Behind the Technology: Image Generation

- Adding noise to images
- Reversing noise using diffusion models
- How AI transforms randomness into meaningful images

Module 2: The AI Tooling Landscape

Reimagining Content Consumption

- Synthesising and summarising content more efficiently

Exercise: ChatPDF

- What is ChatPDF?
- Querying documents using natural language

Gamma.app

- Co-designing presentation decks with AI
- Practical Natural Language Processing

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Everyday Business Tasks

- Using AI to support routine professional activities

Microsoft 365 Copilot

- A new approach to workplace productivity
- Using AI across Microsoft applications

Exercise: Microsoft Bing and Edge

- Accessing AI tools directly within everyday environments

Google Sheets with AI

- AI plugins and integrations for Google Workspace

Module 3: Legal Questions

Who Owns What?

- Intellectual property fundamentals
- Intellectual property and AI
- Who owns an AI model?
- Who owns AI-generated data?

Module 4: Prompt Engineering Fundamentals

Introduction

- What is a prompt?
- Example prompts
- How and why prompt engineering works
- Prompt Engineers and AI Whisperers

Fundamentals

- The five core prompting rules
- Role: Who am I?
- Why defining a role matters
- Context: What are we doing?
- Input: What data is being used?
- Output: What result is expected?
- Restrictions: How should the task be completed?
- Scope: Breaking problems into smaller parts

Exercise: Dissecting a Prompt

- Analysing the structure of a sample prompt

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Exercise: Writing a Simple Prompt

- Creating a prompt to summarise news

Exercise: Writing Hierarchical Prompts

- Designing a structured prompt for a webpage

Fundamentals Summary

- Revisiting the five core prompting rules

Day 2

Module 5: Prompt Engineering

Behind the Technology: Current Limitations

- Context management
- Performance
- Trustworthiness and reliability

Exercise: OpenAI ChatGPT Limitations

- Hallucinations: confidently generating incorrect information
- Exploring common failure patterns

ChatGPT Plugins and External Capabilities

- What are ChatGPT plugins?
- Browsing the web
- Chatting with documents
- Planning trips with ChatGPT
- Additional capabilities

Intermediate Techniques

- Where intermediate methods fit within the broader prompting landscape

Exercise: Classifying Transactions

- Transaction classification
- Potential solution approaches

Multi-shot Prompting

- Zero-shot prompting
- One-shot prompting
- Multi-shot prompting

Exercise: Brainstorming Presentation Titles

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- Using AI to generate presentation title ideas

Multiple Choice Prompting

- Multiple choice prompt design
- Tips for creating effective multiple choice prompts

Exercise: Creating a Tagline for a New Shop

- Generating a tagline
- Reviewing potential solutions

Reasoning Techniques

- Reasoning prompts
- Enhanced reasoning approaches

Exercise: Taming Creativity

- Managing the creativity level of AI-generated responses

Rating Techniques

- Rating outputs
- Techniques for obtaining meaningful scores

Exercise: Double-Checking Answers

- Asking AI systems to review and verify their responses

Self-Reflection

- Self-reflection techniques
- Best practices for more reliable outputs

Advanced Techniques

Prompt Compression

- What is prompt compression?
- Compressing a prompt
- Decompressing a prompt
- Practical notes on compression

Exercise: Prompt Compression

- Unlocking a secret message with ChatGPT

Meta Prompting

- What is meta prompting?
- Using prompts to generate better prompts

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Chain of Density

- What is Chain of Density prompting?
- Research behind the technique

Exercise: Chain of Density

- Summarising an article using Chain of Density

Module 6: Real-World Use Cases

Everyday Examples

- Email writing
- Data analysis with Advanced Data Analysis
- Voice-to-Text use cases
- Translation

Module 7: Outlook

- What is coming in the short term?
- AI's impact on organisations and businesses
- AI's impact on society
- AI's impact on humanity
- Stuart Russell's *Human Compatible*
- Your imagination is the limit

Module 8: Summary

- Review of the five core prompting rules
- Summary of intermediate techniques
- Summary of advanced techniques
- Overview of ChatGPT plugins
- Review of AI tools covered during the course
- A final AI-generated summary of the course summary