

# AI Fundamentals

## Module 1.1: Introduction to AI

### Key Words

#### Understanding AI

##### Artificial Intelligence (AI):

A field of science focused on creating computer systems that can perform tasks that typically require human intelligence. AI aims to develop systems capable of reasoning, learning, and acting autonomously to address complex problems.

##### Machine Learning (ML):

A subset of AI that allows machines to learn and improve from experience without explicit programming. It involves using algorithms to analyze large datasets, identify patterns, and make informed decisions.

##### Training Set:

A collection of data used to train machine learning models.

##### Supervised Learning:

A type of ML where the training data is labeled, providing the model with the correct output values to learn from.

##### Unsupervised Learning:

A type of ML where the training data is unlabeled, allowing the algorithm to identify patterns and relationships on its own.

##### AI Tool:

AI-powered software designed to automate or assist users with specific tasks.

### Generative AI:

A type of AI that can create new content, such as text, images, or audio, based on user input.

### Natural Language:

The way humans communicate through speech and writing, which is often used to interact with generative AI tools.

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## Capabilities and Limitations of AI

### AI Augmentation:

The process of using AI to enhance existing work products by making them easier to produce or improving their quality.

### AI Automation:

The use of AI to complete tasks without any human intervention.

### Hallucinations:

Inaccuracies or false information produced by AI systems.

### Bias:

The potential for AI systems to produce skewed or unfair results due to limitations or biases present in the training data.

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## Types of AI

### Narrow AI:

AI systems designed for a specific task and operate within limited constraints. Most AI applications today fall under this category.

### General AI:

Hypothetical AI that exhibits human-level intelligence across various tasks and can transfer learning between domains. General AI is still an area of ongoing research.

### Super AI:

A theoretical concept of AI that surpasses human intelligence in all aspects.

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## Applications of AI

### Business Intelligence:

AI can be used to analyze business data and provide insights that help improve decision-making.

### Healthcare:

AI applications in this sector include disease diagnosis, drug discovery, and personalized treatment plans.

### Finance:

AI plays a crucial role in areas like risk assessment, fraud detection, and personalized financial services.

### Manufacturing:

AI is used in this field for tasks such as quality control, predictive maintenance, and optimizing production processes.

### Customer Service:

AI-powered chatbots and virtual assistants provide customer support and personalized interactions.

### Education:

AI applications can personalize learning experiences, track student progress, and automate administrative tasks.

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