

The Definition of Artificial Intelligence

Workshop

»Artificial Intelligence in Distribution and Franchise Systems«

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Overview

Theoretical and applied perspectives on Artificial Intelligence:

- What is AI?
- What mechanisms produce AI?
- What types of AI are available?
- What is generative AI?
- What are the future key issues when using AI?

An brief examination of AI, its mechanisms, and its future:

Defining Artificial Intelligence

- **Conceptualization:** Artificial Intelligence (AI) refers to the development of computational systems designed to simulate human cognitive functions, including reasoning, learning, perception, and problem-solving.
- **Core Capabilities:** AI enables machines to process natural language, recognize visual patterns, optimize decision-making, and autonomously perform complex tasks.
- **Illustrative Applications:** AI is integral to virtual assistants (e.g., Siri, Alexa), self-driving vehicle technology, predictive analytics in healthcare, and generative design in engineering.

Mechanisms Underlying AI Functionality

- **Data Processing and Pattern Recognition:** AI systems ingest and analyze vast datasets to identify correlations and trends.
- **Algorithmic Models:** AI relies on diverse learning paradigms, including supervised, unsupervised, and reinforcement learning, alongside deep learning architectures.
- **Optimization and Adaptation:** Through iterative training processes such as backpropagation and gradient descent, AI continuously refines its models.
- **Automated Decision-Making:** AI employs probabilistic reasoning and computational heuristics to generate responses and execute tasks with minimal human intervention.

Classification of AI Systems

1. Narrow AI (Weak AI):

- AI systems designed for specialized tasks without general cognitive flexibility.
- **Examples:** Natural language processing models (e.g., GPT), facial recognition algorithms, and recommendation engines.

2. General AI (Strong AI):

- A theoretical construct representing AI capable of human-like reasoning and adaptability across diverse domains.

3. Artificial Superintelligence (ASI):

- A speculative category wherein AI surpasses human intellectual capabilities across all cognitive dimensions, raising profound ethical and existential concerns.

Generative AI – Principles and Applications

- **Definition:** Generative AI refers to systems that autonomously produce novel content, including textual compositions, visual art, synthetic audio, and video.
- **Mechanisms:** Utilizes neural architectures such as Generative Adversarial Networks (GANs) and Transformer-based models (e.g., GPT, DALL·E) to synthesize content by extrapolating from large-scale training datasets.
- **Key Applications:**
 - Automated content generation for media and entertainment industries.
 - Enhancing creative workflows in digital art and music composition.
 - Synthetic data generation for machine learning model training.
 - Development of highly realistic deepfake technology.

The Future of AI – Opportunities and Challenges

- AI continues to transform industries, including sales, distribution and franchising, by enabling automation, optimization, and enhanced decision-making.
- The trajectory of AI development necessitates interdisciplinary research into ethical implications, regulatory frameworks, and societal impact.
- Generative AI, in particular, raises critical questions about authorship, misinformation, and digital authenticity.
- Future advancements will likely focus on explainability, fairness, and robustness in AI-driven decision-making systems.

**Thank you for your attention
&
enjoy the workshop.**

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