2025-2026

The Future of Artificial Intelligence

Introduction

Artificial intelligence (AI) is one of the most significant technological developments of the modern era, continuing to make significant progress in various fields, from medicine and education to industry and the economy. With increasing research and developments, AI is poised to usher in a future full of innovations that could change the way we live and work. In this lecture, we will discuss the most important future trends in AI, as well as the most prominent emerging research and technologies that could shape the future of this technology.

First: Future Trends in Artificial Intelligence (AI)

1. Explanatory Artificial Intelligence (XAI) - Explainable AI

One of the biggest challenges facing AI is the "black box" problem, where it is difficult to explain how decisions are made. Explanatory AI aims to develop systems that can provide clear and understandable justifications for their decisions, increasing transparency and trust in these systems, especially in vital fields such as medicine and finance.

2. Self-Supervised Learning (SSL)

Self-learning is a technique that enables AI to learn from data without the need for extensive human supervision. This trend will improve model performance and reduce the need for massive, manually labeled data, helping to develop more efficient and intelligent applications.

3. Emotional AI (AI)

AI research seeks to develop systems capable of recognizing and interacting with human emotions in natural ways, such as virtual assistants and customer service systems that can understand users' emotions and respond accordingly.

4. Multimodal AI (AI)

Rather than focusing on a single type of data (such as text or Images), AI models are being developed that can analyze and process multiple types of data simultaneously, enhancing understanding of different contexts and making

systems more intelligent and comprehensive.

5. Integration of Artificial Intelligence (AI) and Quantum Computing

Quantum computing is one of the most promising fields, offering immense computing power beyond that of conventional computers. When combined with AI, huge improvements can be achieved in areas such as cryptography, drug discovery, and big data analysis.

6. Artificial General Intelligence (AGI)

While current AI is specialized in specific tasks, the future goal is to develop general AI that can think, learn, and make decisions similar to the human mind, opening the door to unlimited uses for this technology.

Second: Emerging Research and Recent Technologies

1. Large AI Models

In recent years, we have witnessed tremendous development in AI models such as ChatGPT, GPT-4, Gemini, and DeepSeek, which rely on deep learning and big data analysis. These models are used in areas such as translation, text generation, and complex data analysis.

2. Integration of AI AI-Powered Robotics

Research continues to develop more intelligent and autonomous robots, combining deep learning and computer vision to improve robot interaction with their surrounding environment, contributing to areas such as healthcare, manufacturing, and space exploration.

3. Artificial Intelligence in Medicine and Diagnostics

Recent research includes the use of AI in highly accurate disease diagnosis, such as cancer detection using deep learning, and the analysis of X-ray and MRI images to improve diagnostic accuracy.

4. Generative AI

We have seen significant advances in the field of generative AI, where these models can generate new images, videos, and music based on input data. This field is used in creative industries such as fashion design, art, and advertising.

5. Artificial Intelligence and Sustainability Research for AI

Some research seeks to use AI to improve energy consumption, develop smart agricultural systems, and help combat climate change by analyzing climate data and predicting natural disasters.

6. Ethical AI Systems

Many research labs are working to develop AI systems that ensure fairness and transparency, are free of bias, respect user privacy, and adhere to ethical laws in decision-making.

2025-2026

2025-2026