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AI Subfields and Summary

The slides we had covered have a wide range of artificial intelligence (AI) subfields, as highlighted in slide 5. The list includes **computer vision, neural networks, machine learning, deep learning, reinforcement learning, robotics, AI agents, AGI (Artificial General Intelligence), large language models (LLMs), multimodal AI, supercomputing, and natural language processing (NLP)**, among others. These subfields represent various research areas and applications of AI that span across different industries, from automating tasks and understanding natural languages to advanced model training on high-performance computing (HPC) systems.

Most Interesting Topic: Question Answering

One of the topics that stands out to me is **question answering (QA)**, which falls under **natural language processing (NLP)** and **large language models (LLMs)**. QA systems aim to provide precise and contextually accurate responses to user questions, often leveraging models like **GPT** and **BERT**. These models are trained on vast datasets to understand context, intent, and provide relevant answers. This topic interests me due to its applicability in real-world problem-solving environments, such as customer service, education, and digital assistants.

Previous Knowledge and Experience

I have prior experience with developing an **AI-powered chatbot for student services**. In this project, I used advanced NLP models to provide accurate and contextually relevant answers to student queries. The chatbot was integrated into a service platform to enhance the student experience by answering common questions about academic procedures, deadlines, and support services. I worked extensively with BERT to improve the model's understanding of various student questions and ensure accurate responses.

Expectations from the Course

I expect to deepen my understanding of advanced AI techniques such as:

- 1. Large Language Models (LLMs):** learning more about how transformers, like GPT and BERT, are trained and fine-tuned for specific tasks like question answering.
- 2. Multimodal AI:** exploring how AI models can integrate different types of data (e.g., text, images, video) to make more comprehensive decisions.
- 3. Reinforcement Learning:** understanding how agents can learn optimal actions through reward-based systems, which could improve AI performance in dynamic environments.
- 4. Generative AI and GANs:** investigating how AI generates new data and its potential for applications such as image, audio, and text generation.
- 5. Supercomputing for AI:** learning about the integration of AI models with HPC resources to manage and process large datasets efficiently.

Lastly, I expect this course to provide me with a deeper theoretical and practical understanding of these AI techniques and help me apply them to real-world scenarios, particularly in improving question-answering systems.