AI Unit Homework

Pre-Session 1: What Do We Mean by "Artificial Intelligence"?

Watch this video: What Is Artificial Intelligence? Crash Course AI #1

Using content from the video and your New York Times subscription (or other curated news source):

1. Find two definitions of AI and compare/contrast them (they should differ in at least one aspect)

2.Identify three tasks that AI systems have excelled at, and three examples of tasks that they struggle on.

3. What is the difference between automation and AI? Give a real world example of each (that you have not used above).

4. Find three things that excite some people about AI and three things that people worry about regarding AI.

AI Unit Homework

Pre-Session 2: Expert Systems - Correctness without Comprehension

Watch this video: Symbolic AI: Crash Course AI #10

Using content from the video and your New York Times subscription, or other curated news source (please use citations):

1. What defines an ”expert system”, and what are its components?

2. In what sense can an expert system be “correct” without “understanding”?

3. Where do expert systems perform well, and where do they fail?

4. How is an expert system like a human expert, and how do they differ?

AI Unit Homework

Pre-Session 3: Neural Networks & Machine Learning - Learning without Awareness

Watch these videos:
Supervised Learning: Crash Course AI #2
Neural Networks and Deep Learning: Crash Course AI #3

Using content from the video and your New York Times subscription, or other curated news source (please use citations):

1. In machine learning, what does it mean for the system to “learn”?

2. How do neural networks differ from expert systems in the way that knowledge is represented?

3. Why is it difficult for neural networks to explain their decisions?

4. What tasks are neural networks especially good at, and where do they fail?

AI Unit Homework

Pre-Session 4: Large Language Models - Fluency without Understanding

Watch this video: Large Language Models explained briefly

Using content from the video and your New York Times subscription, or other curated news source (please use citations):

1. What task is a large language model like GPT-3 fundamentally trained to perform?

2. How is it that LLMs can produce fluent, confident language without understanding?

3. What kinds of tasks are LLMs well-suited for, and what kinds of tasks expose their limitations?

4. Given that LLMs generate answers without awareness or verification, discuss one context where relying on an LLM's output would be reasonable, and one where it would be risky.

AI Unit Homework

Pre-Session 5: The Multiplier Effect: When AI Helps and When It Hurts

Watch this video: Artificial intelligence: What are the risks and benefits? PBS

Using content from the video and your New York Times subscription, or other curated news source (please use citations):

1. Two sides of the story: According to the video, what are two potential benefits of AI and two potential risks or harms mentioned? Please be specific and use examples from the video.

2. AI in Context: The video talks about AI becoming harder to distinguish from real content and harder to regulate. Using your NYT/curated news source, find one news article that illustrates either a benefit of AI or a risk from AI. Summarize how that news story connects to the video's discussion.

3. Amplification in Practice: The video implies that AI tools are powerful amplifiers of both good and bad. Describe one example (from the video or your news source) where AI has made something better or easier, and one where AI has made something worse or riskier.

4. Human Choice & Responsibility: Based on the video and your news reading, how does human decision-making influence whether AI's impact will be positive or negative? Explain with one example of a choice that amplifies good outcomes and one choice that amplifies negative outcomes.

AI Unit Homework

Pre-Session 6: Hybrid AI Systems & Responsible Use

Watch these videos: What is Hybrid AI? An Easy Explanation For Anyone
RAG and MCP Explained | The Future of Hybrid AI Frameworks #AI #ArtificialIntelli...

Using content from the videos and your New York Times subscription, or other curated news source (please use citations):

1. Based on the videos, explain in your own words:
    a) What “hybrid AI” means and why it matters.
    b) How hybrid AI aims to combine fluent language generation with grounded reasoning or structured data access.

2. What is Retrieval-Augmented Generation (RAG)?
    a) Describe how RAG improves language model responses compared to a standard LLM.
    b) Using a news article about AI tools or systems, explain one real-world context where RAG-style grounding would reduce risk (e.g., reduce hallucinations or outdated responses).

3. What role does MCP play in hybrid AI systems especially compared to RAG?

4. Use your news source to find a recent AI development (e.g., AI agents, tool integration, enterprise workflows) that reflects why structured data and tool access is becoming important in AI applications.