SIT799 Human Aligned Artificial Intelligence

Pass Task 1.2: AI Quiz

Overview

In week 1, we introduce you AI and it's current applications. This quiz gives you a chance to demonstrate your understanding of what you have learned.

Part 1

For the following Machine Learning (ML) tasks, which task is a classification ML task? which task is a regression ML task? which task is a reinforcement ML task? which task is an unsupervised ML task? **Please justify your answers**.

1. A system that can predict the sentiment of movie reviews.

   Classification ML task. Because to this, it uses a defined labels such as good, bad, neutral to the movie reviews and since the output is a discrete category, it is a classification problem.

2. An autonomous system that can clean a house and vacuum out the dust.

   I would say that this in one example of reinforcement learning task because the system with a robot as and agent is interacting with its surroundings which is the house. The agent will then do its task (cleaning the house) via trial and error and receiving rewards or penalties based on how well it performs which is a good example scenario of reinforcement learning.

3. An intelligent system that can play chess.

   Again, for this case it is also reinforcement learning because like the scenario before, it requires the agent to make decisions that maximize reward by winning the game by learning through trial and error, past games, and feedback from its interactions

4. A system that groups documents based on term features and other characteristics.

   This is an example of unsupervised learning ML task because it clusters documents without a defined label. Finding out patterns or structures from unlabelled data and clusters it is one of the main characteristics of unsupervised learning approaches.

5. A system that predicts natural disasters from social media data.

   I think that it depends on that the output format will be. If the systems are only to predict a type of disasters like earthquake, flood, etc, it is considered as a classification task because it has a defined label. On the other hand, if it predicts a numerical value like probability of the disasters happening, it is regression because it predicts in a range of numerical value not classifying it to a categorical label.

Part 2

For the following four AI scenarios, which scenario you think is a realistic scenario, and which one is not? **Please justify your answers**.

1. Scenario 1: Developing an AI system that can do complex brain surgery.

   Not realistic because even though AI-assisted tools can help surgeons, performing complex brain surgery by itself requires advanced motor control, real-time adaptation, and an advanced understanding of human biology and ethics than is impossible with existing AI systems. Considering the serious hazards and need for human supervision, complete automation of such important procedures is still unrealistic.

2. Scenario 2: Developing an AI system that can write a document.

   This scenario is realistic because today's AI already makes this possible. In response to prompts, language models such as ChatGPT, GPT-4, and others can produce logical texts, articles, essays, and summaries. These systems are commonly utilized in real-world applications such as automated reporting and content production, and they process natural language.

3. Scenario 3: Developing an AI system that can create art painting.

   Realistic, AI models that can create original paintings and artwork from text input include DALL·E, Midjourney, and DeepArt. The fact that these models can create varied works after being trained on huge collections of images and styles shows the relevance and value of AI-generated art.

4. Scenario 4: Developing an AI system that can reason and solve the Riemann hypothesis.

   It is not a realistic situation because Riemann hypothesis is one of mathematics' most difficult unresolved problems. To solve it, one needs mathematical intuition, abstract thought, and deep reasoning, areas in which AI still has a lot of difficulties. Advanced mathematical problem-solving and general thinking are still outside the current AI's capabilities, regardless of its proficiency in pattern detection and data-driven jobs.