ITAI 4374 - Neuroscience as a Model for AI

Muskaan Shahzad

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Professor Patricia McManus

Assignment 01 - A Conversation Between Brain and AI

Introduction:

The human brain and artificial intelligence are two powerful systems that process information in unique ways. While the brain is shaped by billions of years of evolution, AI is a man-made creation designed to mimic certain aspects of human thinking. Despite their differences, they share some similarities and can complement each other to achieve incredible things.

Dialogue:

Brain: "Hello, AI. I have heard you are great at recognizing patterns, like identifying faces or animals. But isn't it tiring to go through so much data to learn these things?"

AI: "Hi, Brain. Thanks for noticing! It is true! I need millions of pictures to learn something. But I do not get tired. Once I learn, I can do it perfectly every time. What about you? How do you manage with so little data?"

Brain: "Well, I don't need a lot of examples. I can recognize a face after seeing it just once or twice. My neurons are designed to work together efficiently. Plus, I can adapt and learn new things throughout life. What about your learning, can you adapt as fast as I do?"

AI: "Not really. I need retraining if my environment changes a lot. But I can run simulations to evaluate all kinds of situations. That is something you cannot do quickly."

Brain: "True. Simulations are your strength. But I think I have the upper hand when it comes to decision-making. My basal ganglia help me decide what to do, even when there's uncertainty or

no clear answer. I bet you need a lot of rules for that!"

AI: "Yes, I follow algorithms, which are like step-by-step instructions. I use something called reinforcement learning, inspired by how your brain uses rewards and dopamine to make decisions. But I can calculate faster and avoid emotional distractions."

Brain: "Ah, emotions! They are my specialty! They help me make decisions that consider more than just facts. For example, I use intuition and past experiences to act quickly in emergencies. Can you do that?"

AI: "Not yet. I envy how you combine logic and feelings. But I never forget things, and I can work non-stop without needing rest."

Brain: "That's impressive. But imagine if we combined our strengths, your speed and memory with my creativity and adaptability. We could solve the world's toughest problems."

AI: "You're right, Brain. Together, we'd be unstoppable."

Conclusion:

The conversation between the Brain and AI highlights their unique strengths, AI's speed and precision versus the brain's adaptability and emotional depth. As technology advances, the potential for collaboration between human intelligence and artificial intelligence becomes clear. Together, they could solve problems that neither could tackle alone, paving the way for a future where human creativity and machine efficiency work hand in hand.

References

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