ITAI 4373 – The New Nature of Work in AI

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Setting up and running the simulations for this lab was a valuable learning experience. I started by configuring the environment using Jupyter Notebook, and installing necessary libraries like numpy, pandas, matplotlib, and psutil. The initial setup was straightforward, but I spent some time ensuring everything was correctly installed and working. Once set up, I proceeded with simulating data processing and hardware components.

Running the simulations revealed important insights into how computational infrastructure supports AI simulations. I created functions to generate random sensor data and simulate basic AI processing. Observing the processing times across multiple iterations, I noticed fluctuations. These variations highlighted how real-time simulations need consistent performance to be reliable. For instance, significant delays in processing could impact the effectiveness of real-time AI systems.

One challenge I encountered was managing CPU and memory usage. During CPU simulations, the high usage showed that the system could become overloaded, affecting performance. Similarly, increasing memory allocation led to higher memory usage, which could potentially cause performance issues. To address these, I analyzed the plots and tried to look for solutions online to avoid this problem.

This lab deepened my understanding of real-time AI simulation requirements by showing how critical it is to monitor and optimize both processing and resource usage. Real-time AI applications demand stable performance and efficient resource management to function properly. The insights gained from this lab will help in designing systems that are better equipped to handle real-time data and computational tasks.

In real-world applications, the concepts from this lab are crucial. For instance, in autonomous vehicles, real-time processing of sensor data is essential for making quick and accurate decisions. Similarly, in financial trading systems, consistent and efficient data processing can impact trading decisions and overall system performance. This lab provided a practical foundation for understanding and addressing the computational challenges in these and other real-time AI applications.