**Automated Chat Response System**

**MSDS692 – Data Science Practicum 1**

**Progress Report for Week 6**

**Project Overview**

This week I focused a lot on improving the chat response system. It is being trained with a sequence-to-sequence (Seq2Seq) model, which uses LSTM units to generate replies that are clear and appropriate for the context. The main goal is to learn from pairs of conversations and respond in a way that mimics human interaction.

**Planned Work for the Week**

My main goal was to further refine how the Seq2Seq model generates text responses and to evaluate its performance in doing so.

**Progress for the Week**

- Model development: Developed a Seq2Seq model architecture that includes embedding layers for language understanding, LSTM layers for memory, and a dense layer for output generation.

- Training: Completed an initial training phase over 10 epochs with a batch size of 250, achieving promising early results, with an accuracy of approximately 85.89% in the initial epoch.

- Troubleshooting: Resolved a data issue, ensuring all input and output sequences were correctly aligned for model training.

**Challenges**

- Data mismatch: I faced an issue with the encoder input data and the decoder input/target data not aligning due to one extra entry in the encoder data. I fixed this by adjusting the data preparation process.

- Model complexity: Balancing the model's complexity with the resources available was challenging. The model needs to be complex enough to learn effectively without requiring excessive resources or time.

- Extended training time: A significant challenge was the lengthy training time, with each epoch taking about 40 minutes.

**Plan for Next Week:**

- Evaluation: I plan to conduct a thorough analysis of the model's generated responses and explore additional evaluation metrics, such as the BLEU score, for a more comprehensive assessment.

- Report writing and presentation: The focus will now shift towards finalizing the project.