# INDIVIDUAL REFLECTION

In the project I am responsible for the frontend development. The goal of the project is to build a pipeline that reconstructs sequences, like timeline or steps using foundational models like Llama and Retrieval Augmented Generation (RAG). Currently my role is to ensure that the user interface, which I am creating using Streamlit aligns with Nvidia's design style. The frontend must be responsive, allowing users to upload files and input desired prompts. When the "Reconstruct Sequence" button is clicked, an output needs to be displayed. The output does not need to be final or fully accurate since the project is still in progress.

There are three major aspects of the project: the backend, the frontend, and the pipeline that retrieves and displays data on the frontend. The backend utilizes Python's Flask library, whose primary function is to handle API calls. The LangChain library is used to build the pipeline, acting as both an integration framework and a tool to manage data flow. For the frontend, we are using the Streamlit library to ensure an interactive user interface. Additionally, ChromaDB is employed for vector storage. Currently, two team members are assigned to work on each of these aspects of the project.

The basic frontend for the project has been developed. Users can enter a prompt for sequence reconstruction and upload multiple files. When the "Reconstruct Sequence" button is clicked, the output is displayed. One significant challenge I encountered while building the frontend was gaining a detailed understanding of the Streamlit library components and integrating Streamlit with HTML and CSS to enhance visual appeal. Currently, I am focused on ensuring that the layout and font styles of the frontend components align with Nvidia's design style, for which I

am using SnipCSS, a Chrome extension. Additionally, my task includes creating a visualization for the sequence generated by the model.

My pace of work has been consistent with the project timeline, ensuring that frontend development aligns with the backend and pipeline tasks. While the basic frontend has been developed, some challenges, such as integrating Streamlit with HTML and CSS, have slightly slowed down the process. However, I have managed to overcome these challenges, ensuring that progress continues without significant delays. Although my task of frontend development comes towards the final stages of the project, it is a crucial aspect for meeting the overall project deadline.

Given that the project involves handling user data, particularly when the user uploads files and prompts for sequence maintaining ethical standards around data privacy and security is essential. The system is designed such that data is processed without storing it unnecessarily reducing the risk of unauthorized access or data leaks. Once the project is completed, we plan to deploy the AI model on AWS Sagemaker which offers a wide range of security features such as VPC integration, data encryption and isolation of resources which ensures confidentiality, integrity, authenticity, and availability of the software model. Ethical considerations include maintaining transparency about how user data is processed and ensuring that any sensitive information is handled with care.

There are several risks involved in completing the project, particularly related to the integration of the backend, pipeline, and frontend. One of the primary risks is ensuring that the data flow between these components remains efficient and seamless, especially as we deal with large datasets. To mitigate this, we are conducting regular tests to check the system's performance and resolve any issues early on. Another risk is ensuring the frontend aligns perfectly with Nvidia's design standards.

To mitigate this, I am using tools like SnipCSS to ensure the layout and visual elements meet the required standards. Furthermore, delays in one aspect of the project, such as the pipeline, could affect the frontend's development. To prevent this, the team is maintaining open communication and collaborating closely to address any blockers in real-time.