**Capstone Project Prospectus**

**Tentative Title:**

Chatbot Recommender Using Generative AI and Large Language Models (LLMs)

**Student Name:**

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**Program:**

Professional Certificate in Machine Learning and Artificial Intelligence

**Faculty Advisor:**

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**Background and Rationale:**

**1. Increasing Demand for Personalization**: In today's digital landscape, users expect personalized experiences tailored to their preferences. Recommender systems play a crucial role in meeting these demands by suggesting products that aligns to user interests. Integrating such capabilities into chatbots can enhance the user engagement.

**2. Advancement in NLP and AI**: Generative AI and large language models, such as GPT (Generative Pre-trained Transformer), have demonstrated remarkable capabilities in understanding and generating human-like text. Leveraging these new technologies enables chatbots to comprehend user inputs more effectively.

**3. Growing Popularity of Chatbots:** Chatbots have become increasingly ubiquitous across various industries, including e-commerce, customer service, etc. Integrating recommendation functionality within chatbots streamlines the user experience by offering suggestions directly within the conversational interface, eliminating the need for users to navigate through separate recommendation pages or interfaces.

**4. Potential for Enhanced User Engagement and Retention: Providing** personalized recommendations within chatbot interactions promotes a deeper level of engagement with users. By offering relevant suggestions based on user preferences, behavior, and past interactions, chatbots can keep users actively involved and encourage return visits, ultimately leading to improved user retention and loyalty.

**Project Description:**

In this project, we aim to develop a ‘Chatbot Recommender System’ that utilizes state-of-the-art generative AI (Gen AI) and large language models (LLMs) to provide personalized recommendations within conversational interfaces. Leveraging the capabilities of these advanced technologies, our chatbot will understand user input, engage in Image recognition, or Voice recognition technology, and provide tailored suggestions based on user’s input.

This project has the potential for future enhancements and extensions, such as integration with e-commerce platforms, customer service systems, or content delivery platforms.

My intention is to execute a comprehensive deployment process inclusive of a user interface (UI) and utilize cloud infrastructure for deployment. However, due to time constraints, the inclusion of this feature might be regarded as discretionary.

**Data and Methodology:**

For an e-commerce chatbot recommender system, you would need various types of data to effectively recommend products to user like user profile, browsing history, carts details, products data etc.

We have the option to utilize existing data or extract information from reputable websites through web scraping, provided the data is publicly accessible.

**Deliverables:**

The project delivery will consist of a Jupyter notebook implemented in Python. Integrating a user interface (UI) using Streamlit or any other suitable method would be advantageous, but it will be pursued based on feasibility. Additionally, efforts will be made to achieve end-to-end deployment on the Cloud platform.

**Timeline:**

April 2024

**Resources:**

Python, Gen AI, LLM, Jupyter notebook/Google Colab, Streamlit, Cloud (AWS/Azure)

(Final resource list – TBD)

**Potential Challenges:**

Creating a chatbot recommender project for e-commerce in Python, incorporating Generative AI (Gen AI) and Large Language Models (LLM), and subsequently deploying it on a cloud platform may pose various challenges:

* Acquiring and preprocessing e-commerce data
* Model Training and Optimization
* Designing effective recommendation algorithms
* User Interface (UI) Development
* Deployment in the Cloud

**Evaluation:**

The project will be evaluated based on the following criteria.

1. Chatbot should demonstrate effective generative capabilities and accurate responses to user queries.
2. The recommendation algorithm should deliver personalized suggestions based on user preferences given as image or voice inputs.
3. The recommendation algorithms should deliver high-quality suggestions with minimal latency.
4. The chatbot should perform efficiently, responding to user queries and generating recommendations.

Note: Accurate evaluation criteria will be defined later.

**Conclusion:**

TBD