**MSc Project Proposal 2023**

**Chatbot for Customer Support**

Description: This topic focuses on developing a chatbot that can handle customer support queries effectively and efficiently. The project involves both web development and research aspects, as you'll need to explore various natural language processing (NLP) techniques and machine learning algorithms to train the chatbot to understand and respond to customer inquiries accurately.

Research Aspects:

* NLP Techniques: Investigate different NLP techniques such as intent recognition, entity extraction, and sentiment analysis to enhance the chatbot's understanding of customer messages.
* Machine Learning Algorithms: Explore machine learning algorithms like supervised learning, unsupervised learning, and reinforcement learning to train the chatbot and improve its responses over time.
* Contextual Understanding: Research methods to enable the chatbot to maintain context and remember previous interactions, allowing for a more personalized and efficient customer experience.
* Knowledge Base Integration: Explore ways to integrate a knowledge base into the chatbot, enabling it to access relevant information and provide accurate responses to customer queries.

Problems that I aim to solve:

* Frequently Asked Questions (FAQs): One of the primary purposes of a customer support chatbot is to handle common and repetitive queries that customers often have. By providing instant responses to FAQs, the chatbot can save time for both the customer and the support team. It can provide information about shipping, returns, product details, account management, and other common inquiries.
* Order Tracking and Status Updates: Customers frequently want to know the status of their orders, including tracking information and estimated delivery dates. A customer support chatbot can help by allowing customers to input their order details or tracking numbers and receive real-time updates on the progress of their orders. This reduces the need for customers to contact a support representative for order-related queries.

Reference:

<https://ieeexplore.ieee.org/abstract/document/9984635>

Types of chatbots:

* *Retrieval based model*: Retrieval-based models are based on a repository of predefined responses. This model doesn't generate any responses only selects the best response based on the input and context. End users follow a scripted conversation flow. Most chatbots are scripted, which means they have limited flexibility. Chatbots cannot handle unseen cases and will more than likely break if they do not have a script to follow. This type of Chatbots generally deals with one domain with less flexibility and more rigid rules. We can use python libraries like NLTK for this type of chatbot.
* *Generative based model:* The generative-based model can build new responses from scratch without relying on predefined responses. Generative model based on machine-translation techniques. This type of chatbot includes OpenAI (ChatGPT) API integration.

Benefits of chatbots:

Conversational chatbots are a new type of customer service; their main benefit is fast and accessible help. All studies reported that the rapid response of chatbots was accentuated. In today’s world, many businesses rely on bots to do their work. In addition, bots help save money and provide other benefits for the business

Purpose of chatbot:

Provide customer support: Chatbots are commonly used to provide support, such as Customer Service Representative. To provide globally accessible customer support, chatbots can be programmed to answer user questions, even during holidays. Chatbots assist with user-generated query flows outside of standard business hours and can reduce overall payroll costs. Instead of paying for one or more staff to work night shifts, you can rely on one Chatbot to interact with multiple clients at once.

Something unique:

* Use natural language processing to understand the customer's intent. This will allow your chatbot to provide more accurate and helpful responses. For example, if a customer asks "How do I cancel my subscription?", your chatbot can use natural language processing to understand that the customer wants to cancel their subscription, and then provide them with the necessary steps to do so. "A Literature Survey of Recent Advances in Chatbots" (MDPI, 2022) This paper surveys the literature on chatbots and identifies a number of areas where improvements can be made, such as the use of natural language processing, the ability to handle complex queries, and the ability to personalize responses.
* Add humour or personality to the chatbot's responses. This can help to make the chatbot more engaging and memorable for customers. For example, if a customer asks a question that the chatbot doesn't know the answer to, the chatbot could respond with a joke or a funny anecdote.