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| **Masters Route:** |  |
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| **2nd Reader**: |  |

# MSc Computing Masters Project Proposal

## Project Title

"Creating an Intelligent Customer Service Chatbot for Accurate and Efficient Support"

## What problem are you trying to solve?

- Reducing the workload on human customer service representatives by handling a large volume of repetitive or simple queries.

- Improving customer satisfaction by providing accurate and prompt responses to their queries.

- Reducing the response time, which leads to customer retention and increase customer loyalty.

- Collecting and analyzing customer data to improve product and service offerings.

- Cost effective solution for businesses as chatbots are relatively cheaper than human customer service representatives.

## Objectives of the project

* To Research and evaluate the current state-of-the-art techniques in natural language processing and machine learning for building chatbots.
* To design and develop a chatbot capable of understanding and responding to customer queries related to a specific topic such as customer service or technical support.
* To test and evaluate the performance of the chatbot using metrics such as accuracy, precision, and recall.
* To implement and integrate the chatbot into a customer service platform for practical usage.
* To study and analyze the effectiveness of the chatbot in terms of customer satisfaction and the reduction of workload on human customer service representatives.
* To report on the findings and provide recommendations for future developments and improvements.
* To develop a user-friendly interface for the chatbot to provide a seamless experience to the customers.

## Expected end products

The expected end products of my project are:

· A report detailing the research, design, development, and evaluation of the chatbot. This report will be a comprehensive document that covers all aspects of the project and will be suitable for publication in a journal or conference paper.

· A working prototype of the chatbot integrated into a customer service platform. The chatbot will be developed using state-of-the-art natural language processing and machine learning techniques, and will be able to assist customers with their technical queries and provide accurate information.

· Results of a technical experiment that will evaluate the chatbot's performance using metrics such as accuracy, precision, and recall. This will provide a clear understanding of the chatbot's capabilities and limitations.

· An evaluation of the chatbot's effectiveness in terms of customer satisfaction and the reduction of workload on human customer service representatives. This will provide valuable insights into the chatbot's impact on the business and its potential for future growth and development.

· Recommendations for future developments and improvements to the chatbot. This will include suggestions for new features and functionalities, as well as changes to the chatbot's design and architecture to optimize its performance and user experience.

· This document can be guidance for SMEs to implement similar chatbot technology into their business based on research and evaluation undertaken.

## Ethical Considerations

Develop a privacy and data protection plan: Develop a plan outlining how personal data will be collected, stored, and used in compliance with relevant laws and regulations

Be transparent with customers: Clearly inform customers about the chatbot's capabilities and limitations, and make it clear that they are interacting with a computer program rather than a human.

Avoid bias and discrimination: Carefully consider the data used to train the chatbot, and take steps to ensure that the chatbot does not perpetuate existing societal biases.

Ensure human oversight: Put in place adequate human oversight to handle complex or sensitive issues that the chatbot is not equipped to handle.

Thoroughly test and evaluate the chatbot: Test and evaluate the chatbot to ensure that it is providing accurate and appropriate responses to customer queries.

Implement security measures: Implement security measures such as encryption, secure data storage, and regular security updates to protect against unauthorized access or data breaches.

Ensure compliance with laws and regulations: Develop and operate the chatbot in compliance with relevant laws and regulations, such as those related to data protection, privacy, and customer service.

Continuously monitor and evaluate: Continuously monitor and evaluate the chatbot for any ethical concerns and take necessary actions to address them.

Seek professional guidance: Seek guidance from experts in fields such as ethics, data protection, and artificial intelligence to ensure that your chatbot is developed and operated in an ethical manner.

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|  | **True** | **False** |
| My project is entirely literature based and/or technical, | ✔ |  |
| My Project does not use any form of participants, | ✔ |  |
| My Project does not use external inputs (e.g. liaising with someone in industry), | ✔ |  |
| My Project does not require me to do work off campus (e.g. in a company), | ✔ |  |
| My Project does not use secondary data sets | ✔ |  |

**If you answer “False” to any of these statements you MUST submit your project for review to the ERM** (see Bb for information on how to do this)

## Justification for Masters level project

Businesses today are facing increasing pressure to provide efficient and effective customer service while managing rising costs. Chatbots have the potential to provide a cost-effective solution to this problem by automating many of the routine tasks associated with customer service.

In the technical support sector, chatbots can help businesses by providing accurate and efficient assistance to customers with technical queries. This can help to reduce the workload on human customer service representatives and improve the overall customer experience.

The use of natural language processing and machine learning techniques in chatbot development has grown significantly in recent years, and there is a need for research to evaluate and improve these techniques to make chatbots more effective.

The project will involve a thorough evaluation of existing chatbot technology and its capabilities, as well as an investigation into the most effective methods for developing and deploying chatbots for technical support.

This research will provide valuable insights into the capabilities and limitations of chatbots, as well as recommendations for future developments and improvements. It will also provide guidance for other businesses looking to implement similar technology.

This project will be a valuable contribution to the field of chatbot development, as it will provide a detailed and comprehensive evaluation of chatbot technology in the context of technical support. It will also provide practical guidance and recommendations for businesses looking to implement chatbot technology in their customer service operations.

This project will also be a good opportunity to enhance the skills in the field of Artificial intelligence, Natural Language Processing, Machine learning, to mention a few.