

Capstone Three: Project Proposal - Chatbot for Customer Support

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Problem Identification:

Problem Statement Formation

E-commerce businesses are facing escalating challenges in managing customer service as they scale. The volume of inquiries can overwhelm support staff, leading to delayed responses and decreased customer satisfaction. An NLP-based chatbot can automate the handling of common inquiries, providing immediate and accurate responses, and thereby enhancing the overall customer service experience while optimizing human resource allocation.

Context

The shift towards digital commerce has exponentially increased the frequency of customer-business interactions. With the expectation of round-the-clock service, businesses need to leverage technology to maintain high-quality support without incurring unsustainable costs.

Criteria for Success

- A chatbot that accurately interprets and responds to a wide range of customer queries.
- Reduction in average response time for customer inquiries.
- Positive feedback from simulated user interactions with the chatbot.
- The chatbot's ability to integrate seamlessly into existing customer service platforms.

Scope of Solution Space

The solution will focus on developing a chatbot ("Yoldi") capable of understanding and answering predefined customer queries. The project will not extend to real-time dynamic interactions involving personalized customer data.

Constraints

- Dependence on the quality and diversity of the training data.
- Limitations in handling complex, nuanced, or non-standard inquiries.

Stakeholders

- E-commerce businesses seeking to improve customer service efficiency.
- Customers requiring prompt and effective support.
- Customer support teams need to prioritize complex issue resolution.

Data Sources

- Amazon Product Customer Review Dataset: <https://registry.opendata.aws/amazon-reviews/>

- **Customer Support on X:** <https://www.kaggle.com/datasets/thoughtvector/customer-support-on-twitter>
- **Github Chatbot Corpus:** <https://github.com/sebischair/NLU-Evaluation-Corpora>

Approach Outline: DSM

- **Data Acquisition & Wrangling:** Load datasets from sources and wrangle the data.
- **EDA:** Visualize patterns in the text data.
- **Data Preprocessing:** Perform text normalization and balance dataset classes.
- **Modeling:** Build a chatbot utilizing NLP techniques for query understanding and response generation. Use cross-validation to assess model performance.
- **Interface Development:** Construct a basic user interface for the chatbot.

Deliverables

- **Code Repository:** A repository containing the full code and documentation for replicating the project.
- **Technical Report:** A detailed report discussing the methodologies, experimentations, and findings.
- **Presentation:** A presentation that summarizes the project for a non-technical audience.