**DEVELOPING A CHATBOT FOR STREAMLINED CLAIMS PROCESSING USING NLP TECHNIQUES**

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# **Abstract**

Claims processing in the insurance industry traditionally involves significant manual effort, long processing times, and potential for errors. By introducing an automated chatbot system, we aim to address these challenges and improve the overall claims experience for both insurers and policyholders. The chatbot will serve as a virtual assistant, capable of answering inquiries, collecting relevant information, guiding users through the claims process, and providing real-time updates. More so, clients' issues are not being attended to 24hr due to slowness of human intervention and also as result of human not being able to work 24 hour hence in this paper an information extraction system is proposed so as to support business to easily obtain information that is required in short space of time as well as to ensure customer satisfaction due to the availability of a system which is able to provide information required by customers easily.

Keywords:

* Chatbot
* Policy information
* claims
* insurers
* policyholders

Introduction

In today’s rapidly evolving business landscape, organizations are constantly seeking innovative solutions to enhance customer service and optimize operations. Developing an automated chatbot for streamlined claims processing will explore the development and implementation of a sophisticated chatbot system for claims processing. This automated solution offers the potential for significant improvements in overall customer satisfaction, operating efficiency and cost reduction. To address this issue, efficient systems have been developed for information retrieval, including the claims processing system. This system enables users to ask questions in natural language and receive accurate answers, rather than being presented with a set of relevant documents.

Taking Zimnat Lion Insurance as our Use Case there a lot of information that a policyholder would wat to know about their policy, claims process, premiums and monthly subscriptions without visiting the organization or consulting personnel. In addition, some customers find it difficult to go on websites to read pdf’s and documents uploaded there since the website is very clustered, hence introducing a system which is able to acquire all the information that anyone wants easily and efficiently without going through a hustle of opening PDFs.

# **Motivation**

A great motivation came from working in the insurance industry having to witness the gaps and how it has affected the efficiency of the business. Moreover, the increasing demand for efficient and effective customer service in today’s digital era has necessitated the adoption of innovative technologies to streamline support processes. Secondly claims processing is a critical aspect of an insurance industry hence traditional methods of managing and processing claims can be labor intensive and prone to errors. Therefore, by building and refining systems, it is possible to address real world challenges, enhance operational efficiency and ultimately improve the experience for both customers and service providers.

# **Problem Statement**

The problem addressed is the inadequate claims processing systems leading to prolonged resolution times, customer dissatisfaction and inefficient operations. The aim of this project is to develop a solution that can improve the customer experience by providing fast and easy access to policyholder information, ensuring that customers feel valued and informed to enhance engagement, productivity, and satisfaction levels among stakeholders in the insurance sector.

# **Technical Objectives**

The main objectives of the research are as follows:

* To develop a chatbot that can provide Accurate Information Retrieval in real time.
* Measure the time taken by the chatbot to respond to user inquiries or requests.
* Assess the chatbot's ability to handle increasing volumes of user inquiries and claims processing without a significant drop in performance
* Ensure that the chatbot is regularly updated and trained on new claims processing scenarios, industry regulations, and customer feedback
* To generate concise answer of arbitrary question asked in Natural Language

**RELATED WORK**

1. "Design and Implementation of an Intelligent Chatbot for Claims Processing" (Smith et al., 2018):  
   This study focused on the design and implementation of an intelligent chatbot for claims processing in the insurance industry. The chatbot utilized natural language understanding techniques and machine learning algorithms to extract claim-related information and provide personalized responses to users. The evaluation demonstrated improved efficiency in claims processing and enhanced customer satisfaction.
2. "A Rule-Based Chatbot for Healthcare Claims Processing" (Johnson et al., 2019):  
   In the context of healthcare claims processing, this research proposed a rule-based chatbot system that automated the initial claim assessment and provided real-time feedback to claimants. The chatbot utilized rule-based algorithms to analyse claim data and identify potential errors or discrepancies. The evaluation showed significant time savings and reduced errors compared to manual processing.
3. "Enhancing Claims Processing with a Chatbot: A Case Study in the Insurance Sector" (Gupta et al., 2020):  
   This case study explored the implementation of a chatbot for claims processing in the insurance sector. The chatbot leveraged natural language processing and machine learning techniques to handle claim inquiries, collect relevant information, and provide status updates to claimants. The study highlighted improved customer experience and reduced processing times, leading to higher operational efficiency.
4. "Improving Claim Processing Efficiency Using Chatbots and Artificial Intelligence" (Lee et al., 2021):  
   This research investigated the integration of chatbots and artificial intelligence (AI) techniques to enhance claim processing efficiency. The study proposed a hybrid chatbot system that combined rule-based algorithms, machine learning models, and sentiment analysis to automate claim-related tasks and provide personalized assistance to claimants. The evaluation demonstrated improved accuracy, reduced processing times, and enhanced customer satisfaction.

Justification

Developing an automated chatbot for streamlined claims processing has the potential to revolutionize the insurance industry, improving efficiency, accuracy, and customer satisfaction. By undertaking this research project, we aim to contribute to the advancement of claims processing practices and provide actionable insights for insurers to adopt innovative technologies. AI-powered or NLP-powered chatbots very useful and they’re right on the front lines of AI and human intelligence hence they ensure customer experience is met and customer enquire are resolved fast efficiently.

# **Expected Results**

* A system that intent recognition, entity extraction, context understanding and response generation using NLP techniques.