

E – BOT : An Advanced Natural Language Processing Chatbot using Deep Learning and Keras Neural Networking

ABSTRACT

E – BOT is a chatbot tailored to assist users navigating Tamil Nadu E-Service websites, employing Advanced Natural Language Processing (NLP) and Deep Learning technologies. The primary goal is to develop a conversational agent capable of understanding user queries related to e-services and providing relevant assistance. At its core, the project harnesses the Natural Language Toolkit (NLTK) in Python for effective language processing. NLTK aids in breaking down and understanding words, forming the basis for the chatbot's ability to comprehend user input. By utilizing NLTK, the project aims to enhance the chatbot's language understanding, ensuring it can effectively interpret and respond to user questions regarding Tamil Nadu E-Service portals. The architecture of the chatbot relies on a neural network model constructed using the Keras framework. Trained on a dataset encompassing various intents and patterns related to e-services, the model becomes adept at recognizing and categorizing user input accurately. Deep learning techniques embedded in the model enable it to adapt and improve its performance over time. The training process involves creating a bag-of-words representation for each input pattern. Configured with multiple layers, including densely connected layers and dropout layers, the model optimizes its ability to understand patterns from the training data. For user interaction, the chatbot is deployed using the Flask framework, transforming it into a web-based application. This user-friendly interface allows individuals to input queries, receive responses, and engage in dynamic conversations with the chatbot regarding Tamil Nadu E-Services. The project outcome is an intelligent chatbot capable of understanding and addressing user queries related to Tamil Nadu E-Services. The integration of NLP and deep learning technologies contributes to the creation of a chatbot that continually evolves and refines its language understanding skills. This project underscores the potential of leveraging technology for user assistance on e-service platforms, reflecting a pragmatic approach to enhancing user experience in the context of Tamil Nadu E-Governance.

In addition to its technical functionalities, the project pays keen attention to the user experience and practical utility of the chatbot within the Tamil Nadu E-Service ecosystem. The web-based interface provides a simple and intuitive platform for users to seamlessly interact with the chatbot, emphasizing functionality and ease of use over unnecessary complexities. In conclusion, this project represents a Spartan yet impactful approach to the development of a chatbot, specifically tailored for assisting users with Tamil Nadu E-Services. By integrating Natural Language Processing and Deep Learning technologies, the chatbot not only signifies a technical achievement but also addresses practical user needs within the context of E-Governance. The synergy of simplicity and effectiveness showcased in this project lays the groundwork for an advanced conversational agent, contributing to a more accessible and user-friendly experience for individuals navigating Tamil Nadu E-Service websites.

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