Build an AI Chatbot from Scratch using Keras Sequential Model

Overview

Companies depend on large and round-the-clock support staff to maintain customer engagement. This can be costly and impractical. Chatbots can effectively boost efficiency and lower the cost of business. It resolves unlimited queries with the least human interaction. Creating robust chatbot training data is costly in terms of human time and effort. Additionally, it increases the product design to deployment time. Companies with only a minimal amount of training data may not be able to produce a robust enough model to use for chatbot interactions.

In this project, we will use internal customer support data to create a robust chatbot using the Sequential model. It also demonstrates how to run the chatbot by using the developed model.

Aim

1. To Process Unstructured Data
2. To Label the data using unsupervised and supervised techniques
3. To build an AI Chatbot for customer assistants using a sequential model

Tech Stack

➔ Language: Python

➔ Libraries: pandas, numpy, seaborn, spacy, tensorflow, sklearn, nltk, matplotlib, hyperopt, keras, chatintents

Data

The dataset is an unstructured assortment of ProjectPro customer service inquiry chat logs. The chat logs consist of timestamped dialogue between a human customer agent and a visitor to the ProjectPro website. The dialogue consists predominately of queries about ProjectPro's services, prices, location, and signup information.

Approach

1. Preprocess semi-structured data
2. Perform exploratory data analysis
3. Unsupervised labeling
4. Supervised labeling
5. Training data preparation

6. Hyperparameter tuning
7. Train deep learning sequential model
8. Evaluating the model
9. Use model for prediction
10. Run the chatbot

Note: Kindly refer README.MD file to run all the code files.

Project Takeaways

1. What are Chatbots?
2. What is semi-structured data?
3. How to process semi-structured data?
4. Unsupervised Labeling
5. How to label data for chatbots?
6. What is unsupervised Labeling?
7. What is supervised Labeling?
8. How to clean the textual data?
9. Exploratory data analysis for textual data
10. How to prepare data for chatbots?
11. How to create embeddings?
12. How to build Keras sequential model?
13. Hyperparameter Tuning
14. How to evaluate the model using accuracy and f1 score?
15. Predictions using the developed model
16. How to run the Chatbot?