Real-Time Sentiment Analysis in a Chat Application

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INTRODUCTION

• Sentiment Analysis is the process of identifying and categorizing opinions expressed in a piece of text to determine the polarity of the opinion – negative, positive or neutral
• Being used in evaluating customer experience with a company/brand, opinion mining on social media, analyze customer reviews for feedback

GOAL

• The goal of this project is to develop a P2P chat application to demonstrate how sentiment analysis can be used to detect user’s mood in real-time by assigning polarity scores to messages

SYSTEM DESIGN AND IMPLEMENTATION

Figure 2. System Architecture

• Designed the GUI and used PAGE – Python Automatic Page Generator to generate boilerplate code for frontend
• Python Sockets and Threads for network connection and logic
• NLTK – Natural Language Toolkit library for training and testing the model
• VADER – Valence Aware Dictionary and sEntiment Reasoner to perform sentiment analysis

RESULTS

• Used Naive Bayes Classifier from the SentimentAnalyzer module in the NLTK library in Python
• Handled negation in sentences for instance, ‘not good’ will yield a negative polarity score
• Obtained an overall accuracy of 76%

CONCLUSION AND FUTURE WORK

• With the use of various libraries, performing Sentiment Analysis in real time is not time intensive
• Working with sentences having complex context such as sarcasm and idioms is a tricky task
• Can be extended to store the chat scores and retrieved later to perform time series analysis to understand the trend

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