

Chapter 6

Predicting Consumer Vision: An AI–NLP Bot on Various Communication Platforms

J. Jayapriya

 <https://orcid.org/0000-0001-6672-6865>

Christ University, India

M. Vinay

 <https://orcid.org/0000-0003-0297-3597>

Christ University, India

Blessy Louis

Christ University, India

C. Balakrishnan

Christ University, India

R. Sindhu

Christ University, India

ABSTRACT

Combining NLP technology into communication platforms offers noteworthy opportunities for businesses to gain actionable insights into consumer behaviour and tailor their marketing strategies accordingly. By leveraging the predictive capabilities of NLP bots, organizations can enhance customer engagement, improve product offerings, and eventually drive business growth in a progressively competitive market landscape. With this context, this chapter focuses on developing an AI-NLP bot to understand consumer or customer behaviour patterns using data from various

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communication platforms. AI-NLP bot is used to predict and analyze the customer's thoughts about the product through their opinion sharing in various sources. Results indicate that the NLP bot accurately predicts consumer sentiment, identifies emerging trends, and anticipates market preferences across different communication platforms. Moreover, the system's malleability and scalability make it appropriate for positioning in various business contexts, extending from e-commerce and retail to hospitality and healthcare.

INTRODUCTION

In the current era of swiftly embryonic digital landscape, businesses are increasingly contingent on effective communication to employ with consumers. With the proliferation of communication platforms such as social media, messaging apps, and email, understanding user sentiment and preferences has become dominant for fruitful publicizing stratagems. Natural Language Processing (NLP) techniques offer an auspicious possibility for analyzing vast amounts of textual data to extract insights and envisage consumer behavior. This chapter presents a different methodology for prophesying consumer vision using an NLP bot deployed across various communication platforms. The anticipated system connects the influence of machine learning algorithms to analyze text data from diverse sources, including customer reviews, social media posts, and email correspondence. The bot gains deep insights into consumer preferences, sentiments, and trends by leveraging cutting-edge NLP schemes such as sentiment analysis, topic modeling, and named entity recognition. Key modules of the NLP bot include data pre-processing, feature extraction, model training, and deployment across multiple communication platforms.

Distributional semantics focuses on representing the meaning of words and phrases based on their distributional patterns in a large corpus of text. Methods like word embeddings (e.g., Word2Vec, GloVe, FastText) and contextual embeddings (e.g., ELMo, BERT, GPT) are used to capture semantic relationships and similarities between words and phrases. With the dawn of deep learning, neural networks have become prevalent in NLP. Architectures like Recurrent Neural Networks (RNNs), Long Short-Term Memory (LSTM) networks, Convolutional Neural Networks (CNNs), and Transformer models have shown remarkable performance in tasks such as machine translation, text generation, sentiment analysis, and named entity recognition.

The following Figure 1 represents the general outline of natural language processing.

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