

# **Literature Survey on Automatic Text Summarization of Product Reviews using NLP and Deep Learning**

## **Introduction**

Automatic text summarization is the process of creating a shorter version of a text that preserves the most important information. It has a wide range of applications, including news summarization, product review summarization, and medical document summarization.

Natural language processing (NLP) and deep learning have been used to develop a variety of automatic text summarization methods. NLP techniques are used to understand the meaning of the text, while deep learning techniques are used to learn the patterns in the text that can be used to generate summaries.

In this literature survey, we focus on automatic text summarization of product reviews using NLP and deep learning. We review the state-of-the-art methods and discuss the challenges and future directions in this research area.

## **Extractive and Abstractive Summarization**

Automatic text summarization methods can be broadly classified into two categories: extractive and abstractive. Extractive summarization methods select the most important sentences from the original text and combine them to form a summary. Abstractive summarization methods, on the other hand, generate new sentences to form a summary.

Extractive summarization methods are typically simpler to implement and more efficient than abstractive summarization methods. However, abstractive summarization methods can produce more informative and fluent summaries.

## **NLP and Deep Learning Methods for Text Summarization**

A variety of NLP and deep learning methods have been used for text summarization. Some of the most common methods include:

**Feature-based methods:** These methods extract features from the text, such as the frequency of words and phrases, the syntactic structure of sentences, and the sentiment of the text. These features are then used to train a machine learning model to identify the most important sentences in the text.

**Attention-based methods:** These methods use attention mechanisms to learn the relationships between different parts of the text. This information is then used to generate summaries that are more informative and fluent.

**Transformer-based methods:** Transformer-based methods are a type of deep learning model that has been shown to be very effective for text summarization. These models learn to represent the meaning of the text in a way that can be used to generate summaries in an efficient and effective manner.

## **Automatic Text Summarization of Product Reviews**

Product reviews are a valuable source of information for consumers who are making purchase decisions. However, it can be time-consuming to read through a large number of product reviews. Automatic text summarization can be used to generate summaries of product reviews that are more concise and informative.

A variety of methods have been proposed for automatic text summarization of product reviews. Some of these methods are based on traditional NLP techniques, while others are based on deep learning techniques.

## **Challenges and Future Directions**

One of the main challenges in automatic text summarization of product reviews is that the reviews can be very diverse in terms of their content and style. Some reviews may be very detailed and informative, while others may be short and to the point. Additionally, reviews may contain different types of information, such as opinions, ratings, and factual information.

Another challenge is that the reviews may be biased towards positive or negative ratings. This can make it difficult to generate summaries that are representative of the overall sentiment of the reviews.

Future research in automatic text summarization of product reviews should focus on developing methods that can handle the diversity of the reviews and the bias that may be present in the reviews. Additionally, future research should focus on developing methods that can generate summaries that are more informative and fluent.

## **Conclusion**

Automatic text summarization of product reviews is a promising area of research with a wide range of potential applications. NLP and deep learning methods have been used to develop a variety of automatic text summarization methods. However, there are still some challenges that need to be addressed before these methods can be widely deployed.

Future research should focus on developing methods that can handle the diversity of the reviews and the bias that may be present in the reviews. Additionally, future research should focus on developing methods that can generate summaries that are more informative and fluent.