Comment Toxity Detection

Abstract:

In the realm of Natural Language Processing (NLP), comment toxicity detection plays a vital role in maintaining healthy and constructive online conversations. This project proposes a novel approach to enhance the accuracy and efficiency of toxicity prediction by leveraging a hybrid model that combines Convolutional Neural Networks (CNNs), Long Short-Term Memory networks (LSTMs), and Bidirectional Encoder Representations from Transformers (BERT) embeddings. By synergistically integrating the strengths of these three architectures, our hybrid model aims to capture both local patterns, sequential dependencies, and contextualized embeddings for a comprehensive understanding of textual data.

Introduction:

Online communication platforms have become integral to modern discourse, enabling users to express opinions and engage in discussions across diverse topics. However, the quality of online conversations can be undermined by toxic comments, which are harmful, offensive, or inappropriate in nature. Automated comment toxicity detection systems have emerged as a critical solution to filter and moderate such content, fostering a safer and more respectful digital environment.

Traditional toxicity detection models often face challenges in capturing nuanced contextual information and understanding the sequential nature of language. To address these limitations, our proposed model embraces a hybrid architecture that amalgamates the strengths of Convolutional Neural Networks (CNNs), Long Short-Term Memory networks (LSTMs), and Bidirectional Encoder Representations from Transformers (BERT).

CNNs excel at capturing local patterns and features within the data, LSTMs are proficient in understanding sequential dependencies, and BERT provides contextualized embeddings that grasp the semantics of the text comprehensively. By synergistically combining these components, our hybrid model seeks to enhance the overall performance of comment toxicity detection, offering a more nuanced understanding of the intricacies of language.

This project aims to contribute to the advancement of comment toxicity detection methods, with potential applications in online moderation, content filtering, and fostering healthier digital discourse. The subsequent sections will delve into the architecture, implementation, and evaluation of the proposed hybrid model, showcasing its capabilities and effectiveness in comparison to traditional models

Nighttime Pedestrian Detection Based on a Fusion of Visual Information and Millimeter-Wave Radar

Abstract: This research presents a novel method to enhance the nighttime pedestrian detection capabilities of self-driving vehicles. By integrating infrared vision and millimeter wave radar data, the proposed approach leverages the strengths of both sensors. The improved YOLOv5 deep learning algorithm is employed for vision-based lateral localization and category features. Simultaneously, MMW radar data is preprocessed to extract distance and velocity information. The fusion process involves tracking pedestrians using the extended Kalman filter, projecting radar data onto infrared images, and employing a correlation gate method for effective data correlation. The resulting multimodal information is integrated through a decision-level fusion algorithm, significantly improving accuracy and robustness in nighttime traffic scenarios, surpassing the performance of individual sensors.

Introduction:

The growing advancements in autonomous driving technologies demand robust perception systems that can effectively navigate complex traffic scenarios, particularly in challenging conditions such as nighttime. In this context, pedestrian detection plays a critical role in ensuring the safety of self-driving vehicles. While traditional approaches often rely on specialized sensors like MMW radar and infrared cameras, this study explores a novel methodology leveraging image processing techniques for nighttime pedestrian detection using visible light cameras.

Current autonomous vehicle systems utilize a variety of sensors, including LIDAR, MMW radar, and cameras, to comprehend the surrounding environment. However, to address challenges associated with hardware costs and availability, this research focuses on harnessing the potential of image processing, specifically tailored for nighttime scenarios. The absence of specialized hardware like MMW radar and infrared cameras necessitates a reliance on visible light cameras and sophisticated image processing algorithms.

The proposed approach involves acquiring visible light images, enhancing them for nighttime visibility, and employing pedestrian detection algorithms based on image processing principles. This research aims to demonstrate the feasibility of an image processing-centric solution, emphasizing its potential in scenarios where dedicated hardware might be impractical.

By exploring image processing techniques for pedestrian detection, this study seeks to contribute to the development of cost-effective and accessible solutions for nighttime

scenarios, opening avenues for broader applicability in the field of autonomous driving. The subsequent sections delve into the detailed methodology, highlighting the key steps involved in implementing this image processing-based approach to nighttime pedestrian detection