Multi-Modal Fake Profile Detection Leveraging Hybrid Models

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Abstract

The objective of this project is to develop an advanced system for detecting fake profiles on social media by leveraging multi-modal data (text, images, and behavioral features) and integrating deep learning models with hybrid ensemble techniques. The proposed system utilizes BERT for text analysis, CNN for image processing, and Random Forest for behavioral data classification. These individual models are combined using a stacking ensemble method, where a meta-classifier improves the final prediction accuracy. The project addresses limitations in existing fake profile detection methods by providing a comprehensive approach that analyzes different aspects of social media profiles, thereby enhancing detection accuracy. The system is trained on diverse datasets from social media, where text preprocessing, image normalization, and numerical data scaling are applied to ensure data consistency. The final system not only improves the precision, recall, and F1-score over traditional methods but also ensures robustness through cross-validation techniques. This solution has potential applications in improving social media security, combating misinformation, and identifying fraudulent accounts across platforms.

Keywords

Fake Profile Detection, Multi-Modal Data, Deep Learning, BERT, CNN, Random Forest, Ensemble Techniques, Stacking Ensemble, Text Analysis, Image Processing, Behavioral Features.