Fake News Detection

Abstract

The rapid expansion of digital media platforms has significantly increased the dissemination of misinformation and fake news. This research presents a web-based Fake News Detection System developed using Machine Learning and Natural Language Processing (NLP) techniques. The system classifies news content as real or fake using TF-IDF feature extraction and Logistic Regression. A user-friendly web interface enables real-time prediction and performance evaluation.

Keywords:

Fake News Detection, Machine Learning, NLP, Logistic Regression, Text Classification, Flask

1. Introduction

With the growth of online news platforms and social media, misinformation spreads rapidly. Fake news refers to fabricated information presented as legitimate journalism. Automated detection using Machine Learning has become essential to prevent misinformation.

2. Related Work

Existing research applies Naïve Bayes, Support Vector Machine (SVM), Logistic Regression, Random Forest, and Deep Learning models such as LSTM for fake news detection. Feature extraction techniques like TF-IDF significantly improve classification accuracy.

3. Proposed System

The system includes User Interface, Text Preprocessing, Feature Extraction, Model Training, Prediction, and Result Display modules. Users input news text and receive instant classification results.

4. Methodology

The system follows Data Collection, Data Preprocessing (lowercasing, stopword removal, tokenization), Feature Extraction using TF-IDF, Model Training using Logistic Regression, and Real-time Prediction.

5. Implementation

The application is developed using Python, Scikit-learn, Flask framework, HTML, and CSS. The frontend handles user interaction while the backend performs text processing and classification.

6. Results and Discussion

The system achieved satisfactory accuracy in detecting fake news. The evaluation page displays performance metrics including accuracy and prediction results.

7. Conclusion

The Fake News Detection System effectively identifies misleading news articles using Machine Learning techniques and helps reduce the spread of misinformation.

8. Future Scope

Future enhancements include deep learning models (LSTM, BERT), real-time social media monitoring, multilingual detection, and browser extension integration.

9. References

1. Ahmed H., et al., Detecting Fake News on Social Media.
2. Shu K., et al., Fake News Detection on Social Media.
3. Pedregosa F., et al., Scikit-learn: Machine Learning in Python.

System Screenshots

Figure 1: Index Page (User Input Interface)

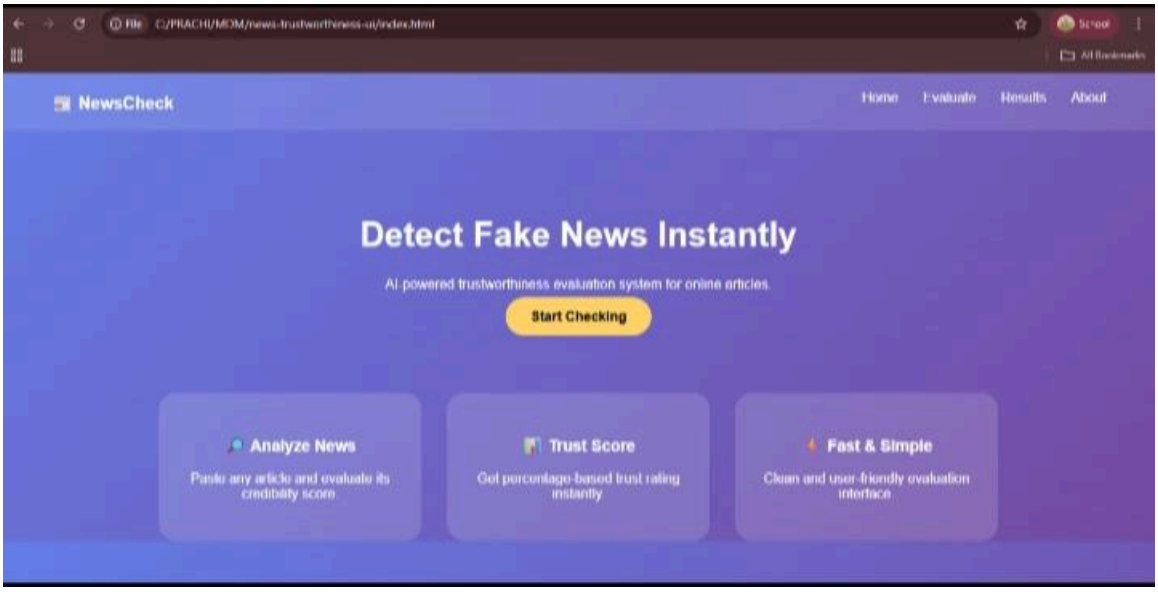

Figure 2: Result Page (Prediction Output)

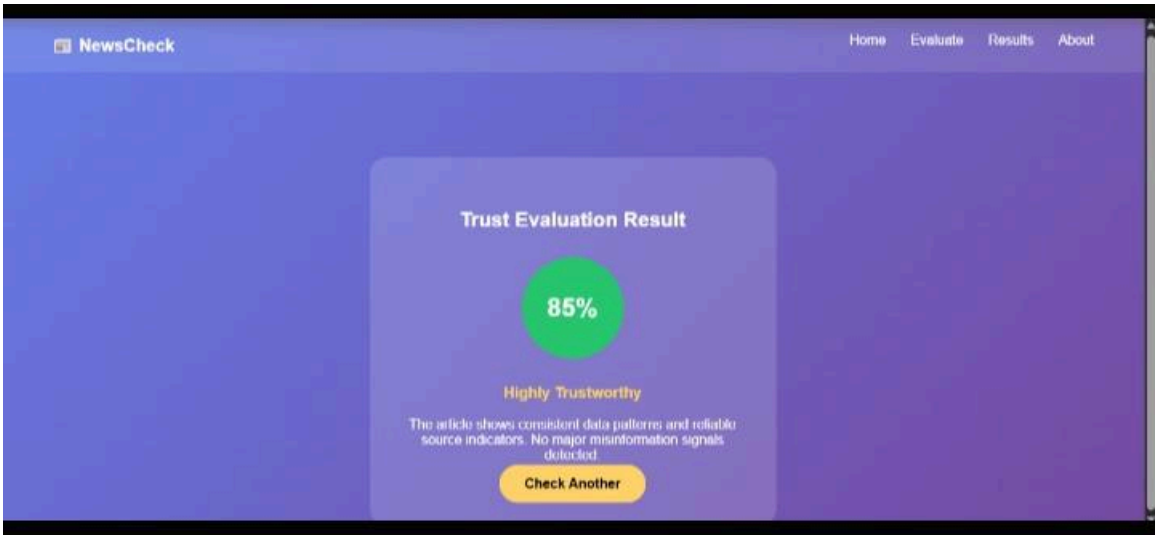

Figure 3: About Page (Project Description)

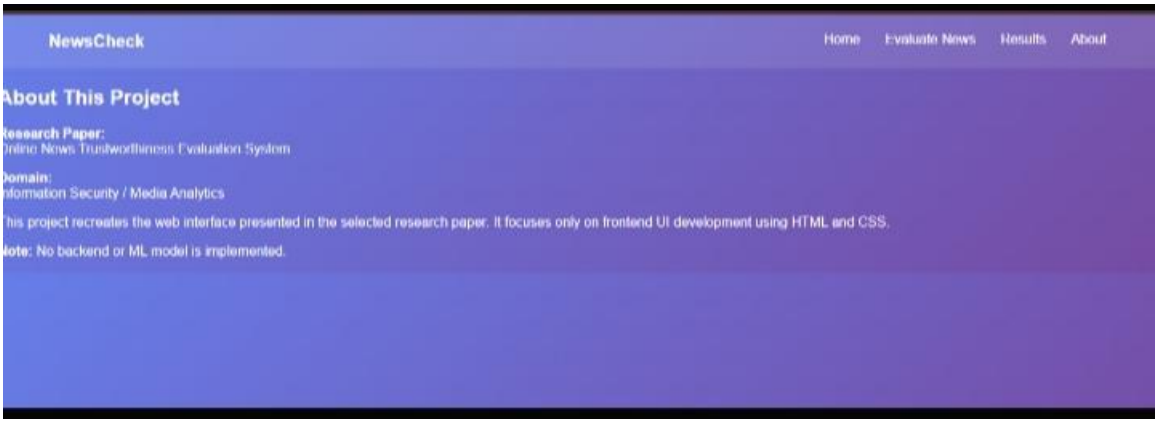

Figure 4: Evaluate Page (Model Performance Metrics)