WarCast

AI-Based News Aggregator for Defense and Geopolitics

Technical Report

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Abstract

This report outlines the design and implementation of an AI-based news aggregator focused on strategic content related to defense and geopolitics. The system integrates natural language processing (NLP) techniques for sentiment analysis, summarization (150 words or less), and a recommendation engine tailored to user preferences. It also features data aggregation from diverse news sources, machine learning algorithms for user profiling, and a dynamic user interface for web and mobile applications.

Keywords: AI, News Aggregation, Geopolitics, Defense, NLP, Recommendation System, Sentiment Analysis

1 Introduction

The goal of this project is to develop an AI-powered news aggregator application that provides personalized news updates on geopolitical and defense-related topics. It leverages machine learning, natural language processing (NLP), and sentiment analysis to tailor news feeds according to user interests while ensuring relevance and engagement with both domestic and international news.

2 System Architecture and Technical Approach

2.1 Data Collection and Aggregation

The application aggregates news articles from multiple domestic and foreign sources using web scraping techniques and RSS feeds. It maintains a defense-centric database repository that ensures a bias-free collection of strategic and geopolitical content.

2.2 Natural Language Processing (NLP) and Summarization

The system employs NLP techniques for analyzing user inputs to extract key topics, keywords, and entities from news articles. It summarizes articles into concise, 150-word descriptions, accompanied by topic modeling, word clouds, and sentiment analysis to enhance content relevance.

2.3 Machine Learning and Recommendation System

The recommendation engine uses machine learning algorithms to understand user profiles based on their interaction and preferences. It provides personalized news feeds that evolve based on continuous learning from user data.

2.4 Sentiment Analysis

Sentiment analysis is applied to news articles to gauge the tone and polarity of the content. This helps users understand the overall sentiment (positive, negative, or neutral) of the news in a strategic context, enhancing the depth of insights offered.

2.5 User Interaction System

The system features interactive capabilities to refine recommendations through user feedback. It allows users to specify interests, keywords, and preferences, improving the recommendation engine's precision over time.

3 Technical Deliverables

- **Data Aggregation:** Scraping and collection of defense-focused news articles from a variety of global and domestic sources.
- **NLP-Based Summarization:** Summarization of articles into 150-word concise reports with topic modeling, sentiment analysis, and word clouds.
- **Sentiment Analysis:** Integration of sentiment analysis to understand and visualize the tone of the news articles.
- **Recommendation System:** Machine learning-based recommendation engine tai-

lored to user profiles and strategic content preferences.

- **User Interface (UI):** Development of an intuitive and dynamic UI for both web and mobile applications.
- **Feedback Loop:** Continuous user feedback mechanism to refine and improve recommendation accuracy.

4 Tech Stack

- **Data Collection:** Web scraping tools like BeautifulSoup and Scrapy.
- **NLP and Machine Learning:** Libraries such as NLTK, SpaCy, Transformers, Tensorflow, Pytorch, Gensim, and Scikit-learn.
- **Backend Development:** Python-based frameworks like Django or Flask for server-side logic.
- **Frontend Development:** React.js for web applications and React Native for mobile app development.
- **Database Management:** Non-relational databases like MongoDB.
- **Deployment and Hosting:** Cloud services like AWS or Google Cloud for scalable deployment.

5 Discussion

The AI-based news aggregator application offers a comprehensive solution to personalized news delivery in defense and geopolitics. By using advanced NLP techniques and sentiment analysis, it enables users to access concise, relevant, and meaningful content that aligns with their strategic interests. This system's ability to dynamically learn from user preferences ensures continuous enhancement of user experience.

Conclusions

The proposed AI-based news aggregator application will revolutionize how strategic and defense-related content is consumed. Its integration of NLP, machine learning, sentiment analysis, and a user-centric design positions it as a robust platform for delivering personalized and insightful news feeds.

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