

# News:U – AI-Based Personalized News Search and Fact-Checked Tracking System

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## Abstract

The rapid growth of online news content has resulted in significant information overload, making it difficult for users to identify relevant and reliable information. Traditional news platforms provide generic feeds with limited personalization and minimal fact-checking capabilities, which often leads to misinformation exposure and inefficient information consumption. This paper presents News:U, an AI-based personalized news search and tracking system designed to deliver curated and verified news articles based on user preferences. The proposed system incorporates automated topic tracking, intelligent relevance ranking, and an integrated fact-checking pipeline to ensure accuracy and relevance. A microservices-based architecture is adopted to support scalability and modularity. The relevancy engine combines topic similarity, user behavior analysis, temporal recency, and source credibility to rank articles. Additionally, a scheduled notification system delivers daily curated news digests to users. Experimental evaluation demonstrates improved personalization efficiency and reduced information overload compared to traditional news aggregation systems. The proposed solution provides a reliable and intelligent platform for students, professionals, and researchers to stay informed with verified and relevant information.

**Keywords.** Personalized News, News Recommendation, Fact Checking, Information Retrieval, NLP, News Aggregation

## 1. Introduction.

The exponential growth of digital news content has transformed how users consume information. Millions of articles are published annually across multiple platforms, making it increasingly difficult for users to identify relevant and reliable content. Traditional news feeds present generic information without considering individual user preferences, resulting in information overload and reduced engagement. Additionally, misinformation and unverified claims spread rapidly across digital platforms, further complicating the process of consuming trustworthy information.

Existing news aggregation systems primarily focus on content delivery but lack comprehensive personalization and automated fact-checking mechanisms. Users often spend significant time filtering

irrelevant content and validating the credibility of articles. This highlights the need for an intelligent system capable of delivering curated, relevant, and verified information.

To address these challenges, this paper proposes News:U, an AI-powered news search and tracking system that integrates automated topic tracking, intelligent content ranking, and fact-checking capabilities. The system provides personalized daily news digests based on user preferences and reading behavior, improving efficiency and reliability in information consumption.

## 1.1. Related Work

Modern recommendation systems employ collaborative filtering and content-based filtering techniques to personalize content. Collaborative filtering recommends items based on user similarities but suffers from cold-start problems. Content-based filtering relies on feature matching but may create echo chambers. Hybrid approaches combining multiple signals have shown improved recommendation performance.

Recent research in personalized news delivery emphasizes behavioral analytics, preference learning, and engagement tracking. Machine learning models analyze user interactions such as clicks, reading time, and sharing behavior to build user profiles. These approaches improve relevance but often lack credibility verification mechanisms.

Fact-checking systems using natural language processing have gained importance in combating misinformation. Automated claim extraction, evidence retrieval, and knowledge-base validation enable scalable verification. However, most existing news platforms integrate recommendation systems and fact-checking independently rather than as a unified solution.

News:U combines personalization, topic tracking, and automated fact-checking into a single intelligent platform, addressing limitations in existing solutions.

## 2. Proposed System

The proposed News:U system provides personalized news curation using artificial intelligence and natural language processing techniques. The system tracks user-selected topics, analyzes user behavior, and ranks articles based on relevance and credibility.

The architecture follows a microservices model consisting of:

1. User Service
2. News Aggregation Service
3. Relevancy Engine
4. Fact Checking Service
5. Notification Service
6. Search Service

The system collects news articles from multiple reliable sources and stores them in a structured database. A relevancy engine computes ranking scores using multiple factors including topic similarity, user preference learning, temporal recency, and source credibility. The fact-checking pipeline extracts claims and validates them against trusted knowledge bases.

The system generates a daily curated digest containing the top relevant articles and delivers it to users through scheduled notifications.

### 3. System Architecture

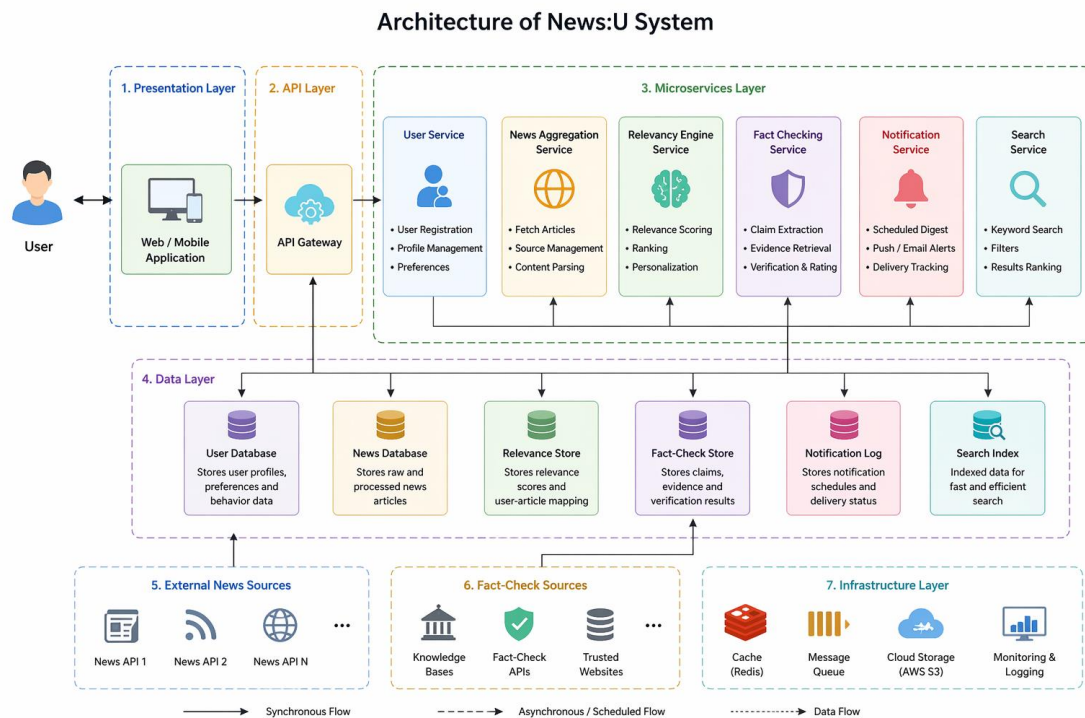


Figure 1. News:U System Architecture

#### 3.1 Relevancy Engine

The relevancy engine ranks articles using a multi-factor scoring model. The ranking includes:

- 1 Topic similarity using cosine similarity
- 2 Behavioral analysis from reading history
- 3 Preference learning from interactions
- 4 Temporal relevance
- 5 Source credibility scoring

These features are combined using weighted scoring to compute final relevance values.

## 3.2 Fact Checking Pipeline

The fact-checking system performs the following steps:

1. Claim extraction using NLP
2. Evidence retrieval from knowledge bases
3. Source verification
4. Status assignment (Verified / Disputed / Unverified)
5. Display of fact-check results

This pipeline ensures users receive verified information along with supporting evidence.

## 4. Results and Discussion

The proposed system improves personalization by filtering large volumes of news content into a small set of highly relevant articles. The multi-factor relevancy engine improves recommendation accuracy compared to basic content filtering approaches. Scheduled daily digests reduce information overload and improve user engagement.

The integration of fact-checking enhances credibility by identifying disputed claims before presenting articles. The microservices architecture ensures scalability and performance for concurrent users.

## 5. Conclusion

This paper presented News:U, an AI-based personalized news search and tracking system designed to address information overload and misinformation challenges. The system integrates intelligent content ranking, topic tracking, and automated fact-checking within a scalable microservices architecture.

The multi-factor relevancy engine improves recommendation quality, while the fact-checking pipeline enhances information reliability. The proposed system provides a practical solution for delivering curated and verified news content. Future work includes deep learning-based personalization, community-driven fact-checking, and integration with academic databases.

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