CHAPTER :5 Results and Discussion

5.1 Introduction

This chapter presents the detailed results obtained after implementing the **AI Fake News Detection and News Aggregator System**. The system was tested rigorously to validate its functionality, accuracy, reliability, user-friendliness, and data consistency.

Results are presented for each major component of the system including authentication, news aggregation, fake news detection, user reporting, and database storage using MongoDB. Screenshots of the interface and MongoDB collections are provided to demonstrate actual working outputs.

5.2 Overview of the Implemented System

The implemented system provides the following key functionalities:

- User Authentication (Login & Registration)
- Informational Pages (Home/Index, About, Contact)
- Dashboard displaying aggregated news
- AI-based Fake News Detection using BERT
- Pre-trained Model (Hugging Face) used.
- Confidence scoring for each article
- User Reporting System for Fake Articles
- MongoDB storage of articles, user details, preferences, and reports

Screenshots of each module are included in this chapter.

5.3 Login/ Register Module Output

5.3.1 Registration Module Output

The Registration Page enables new users to create an account. User data is hashed and securely stored in MongoDB.

Features Demonstrated

New user account creation
Duplicate user validation
Password hashing
Successful navigation to login page after registration

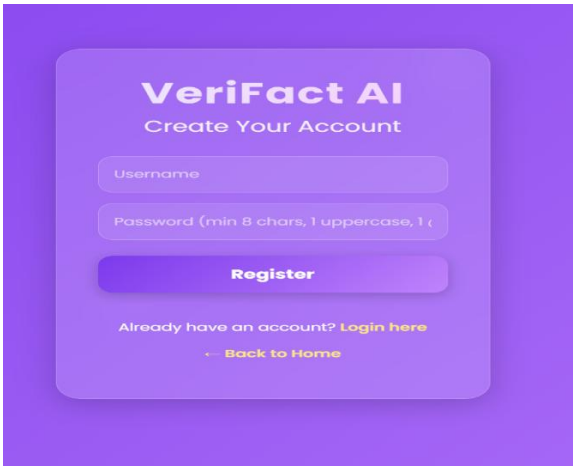

Figure 5.1: Registration Page Interface

5.3.2 Login Module Output

The **Login Page** allows existing users to securely access the system. It verifies credentials stored in MongoDB and establishes a user session.

Features Demonstrated

Username & Password validation
Error message for invalid login
Secure session handling
Redirects to the dashboard after successful login

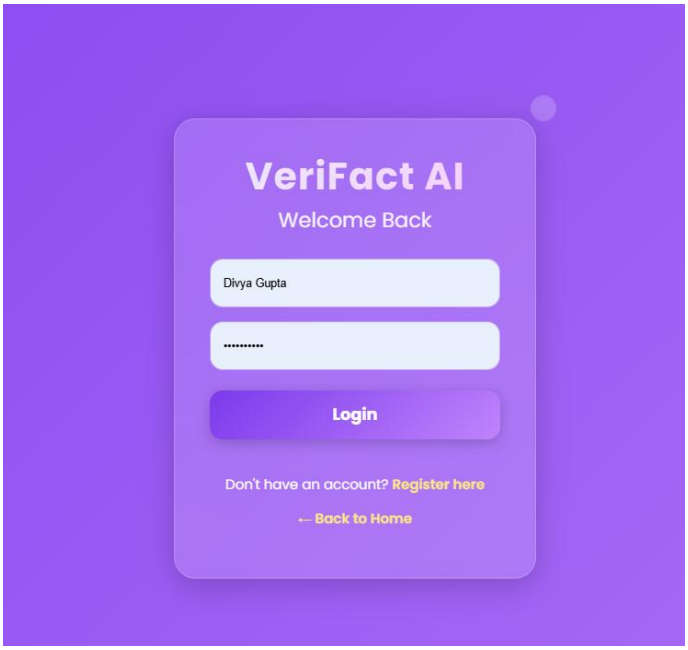

Figure 5.2: Login Page Interface

5.4 Home Page

The **Home Page** serves as the entry point of the AI Fake News Detection & News Aggregator System. It introduces users to the platform, highlights the core features, and provides navigation options to explore different modules of the application such as Login, Register, About, Features, and Contact.

5.4.1 Features Demonstrated

Attractive and intuitive landing interface
Navigation bar with links to Login, Register, About, and Contact
Call-to-action button to get started
Brief description of the system's purpose
Responsive layout built using HTML, CSS, JavaScript, and Bootstrap
Modern UI theme to increase user engagement

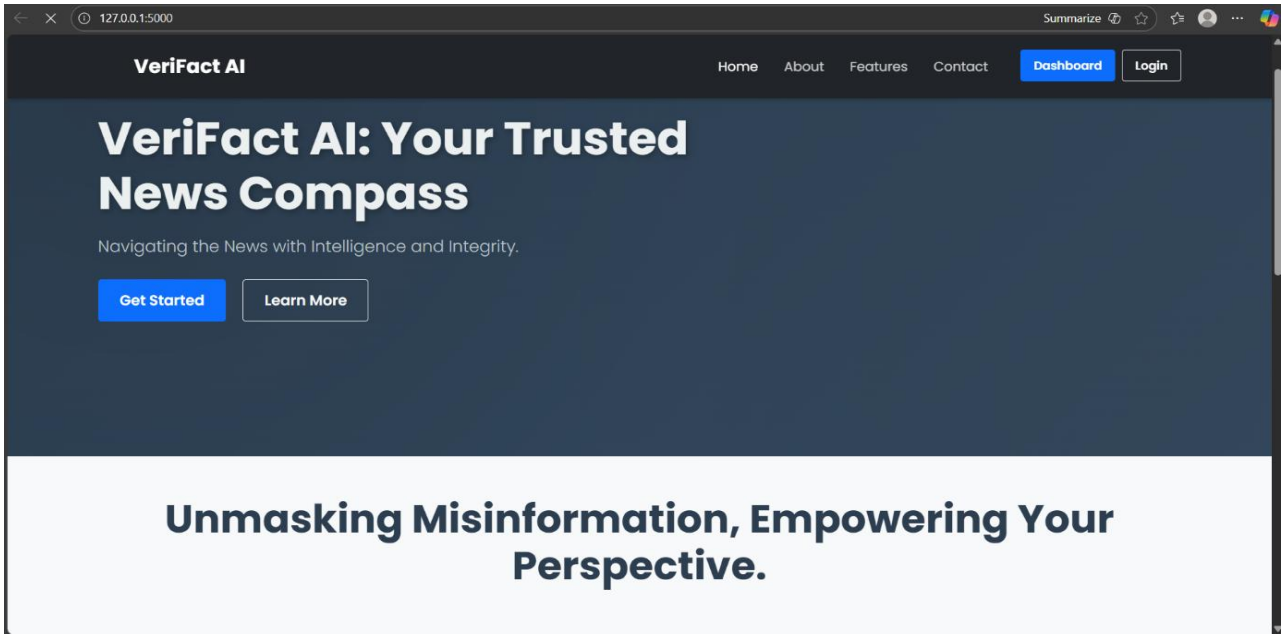

Figure 5.3: Home Page Interface

5.4.2 Description

The home page contains:

- Title Banner: Displays project title such as "VeriFact AI"
- Feature Highlights: Short descriptions of functionalities like AI Fake News Detection,and Fact Checking.

- Navigation Menu: Allows users to access Login, Register, About, Features, Dashboard, and Contact pages.
- Footer Section**:** Displays additional links and credits.

The purpose of the homepage is to orient the user, introduce system capabilities, and guide them smoothly into the core functionalities.

5.5 About Page Output

The **About Page** provides users with an overview of the system's objective, model architecture, and key features.

Features Demonstrated

Clearly	written	system			summary
Explanation	of	AI	and	model	integration
Navigation links to other modules					

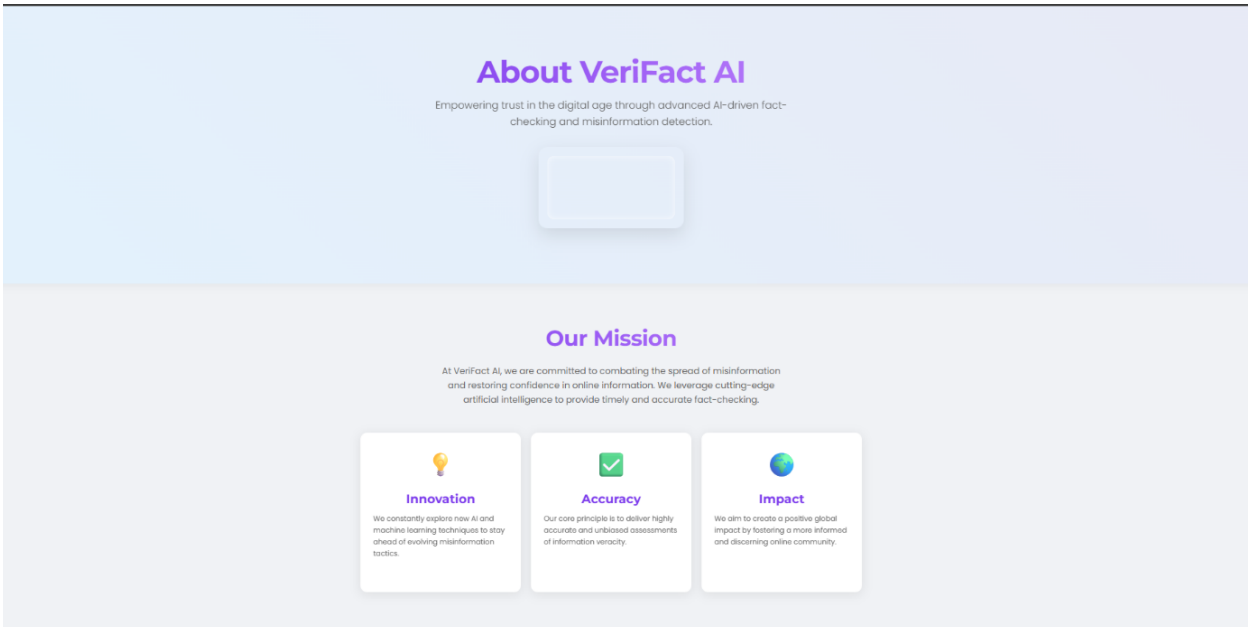

Figure 5.4: About Page Screenshot

5.6 URL Fake News Checker – Dashboard Output

The system provides a URL Fake News Checker, where users can input any news article link to verify its authenticity. After the user submits a URL, the system performs real-time metadata extraction and AI-based classification.

Example Output:

- URL: https://www.bbc.com/news/articles/cvgdgrqwnq9o
- Prediction: TRUE (Real)

- Confidence: 100.00%
- Credibility Score: 0.886
- Credibility Label: High (Real)

Features Demonstrated

- URL-based fake news detection
- AI classifier prediction with confidence score
- Credibility scoring system
- Clean and minimal UI for quick verification

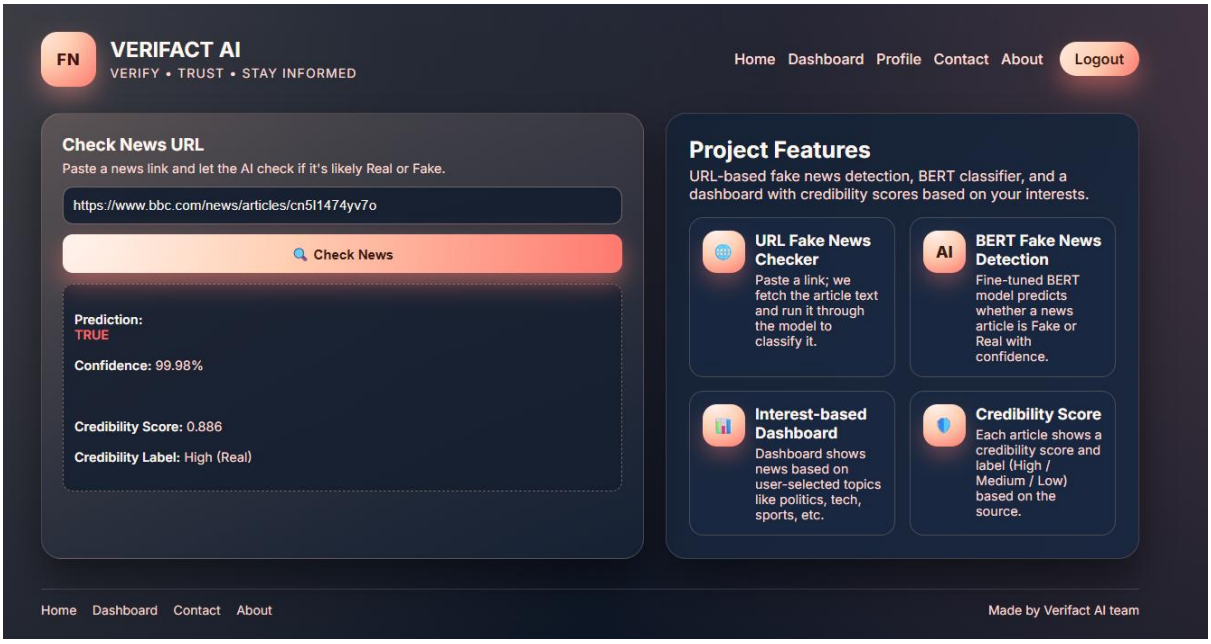

Figure 5.5: URL Fake News Checker Output

5.7 Fake News Classification Results

Each article is processed using the BERT-based and Hugging Face (pretrained model) fake news detection model.

Outputs Displayed

- Prediction: Real / Fake
- Confidence Score: e.g., 91.27%
- Fact Check Result: Verified, No Evidence, or Cross-check Needed

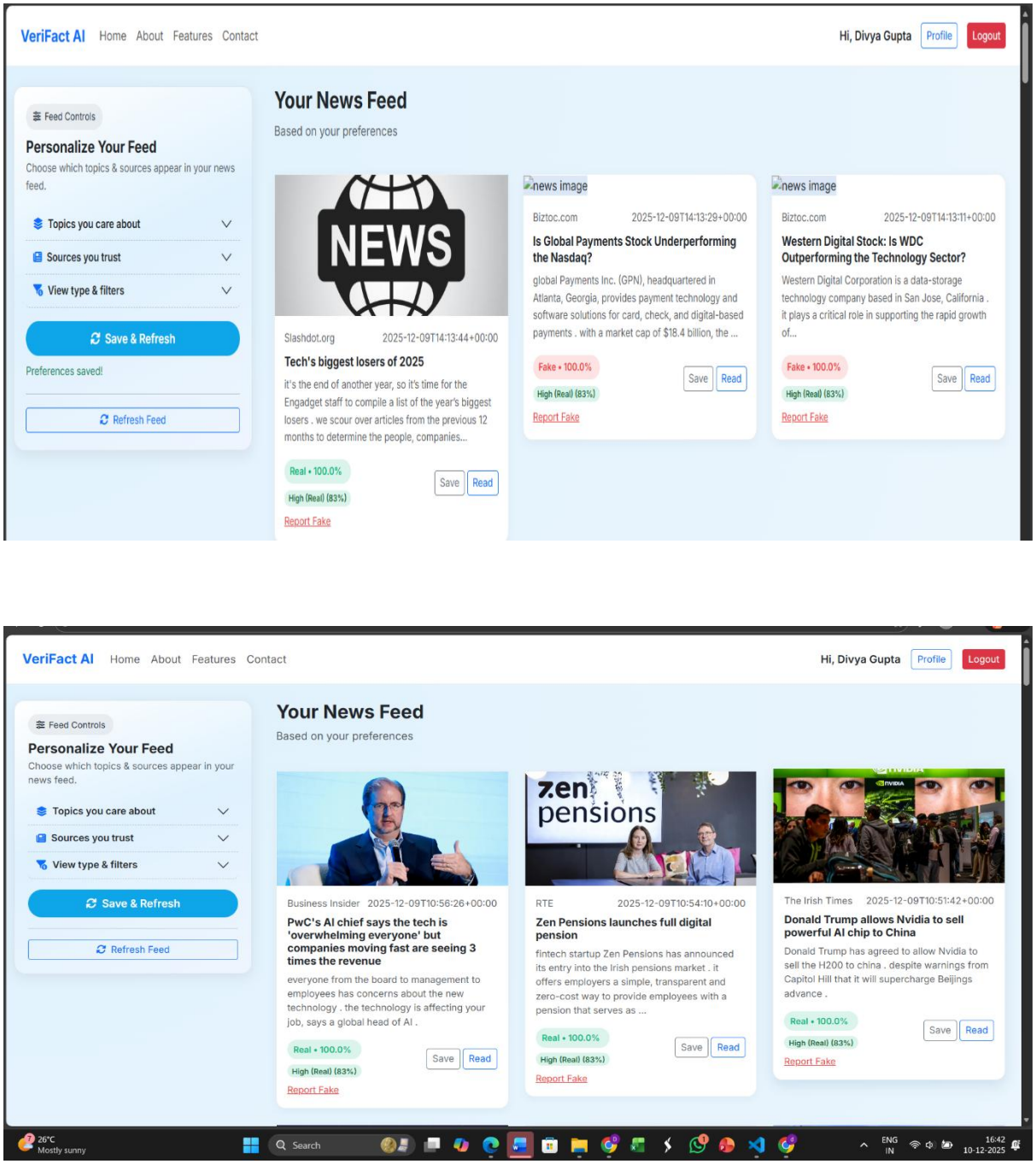

Figure 5.6 Real-Time Classification Output

5.8 User Reporting Fake News – Output

The system allows users to report an article as fake. When a user clicks "Report Fake", a document is stored in MongoDB under the **reports** collection.

Features Demonstrated

Each report stored with user ID, timestamp, URL, and reason

Duplicate reports prevented

System automatically re-checks an article when reports ≥ threshold

Article details are updated after re-evaluation

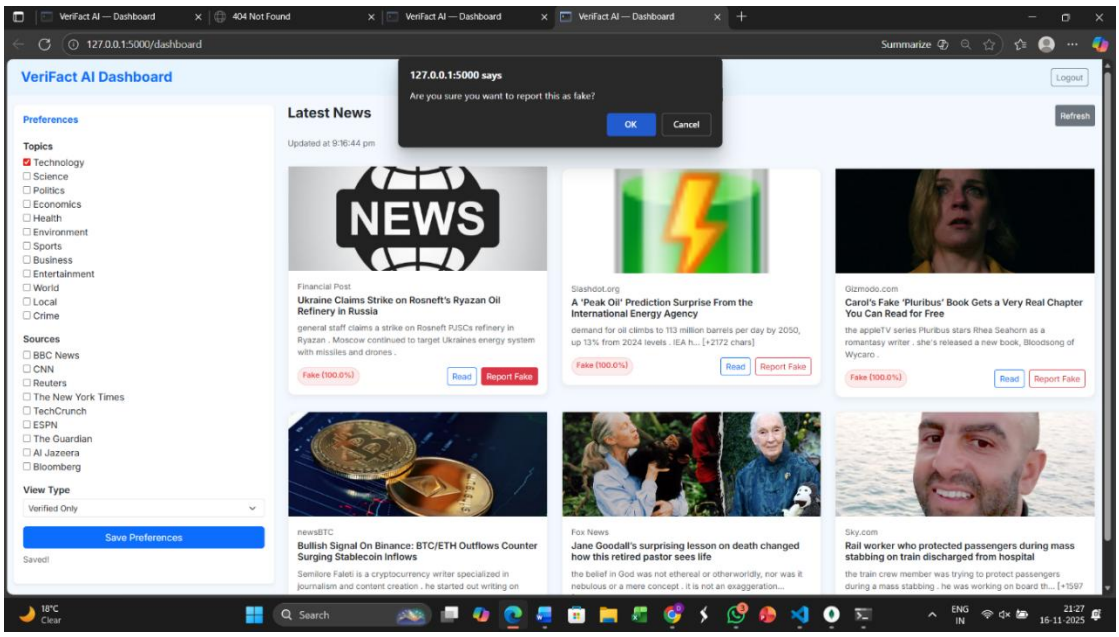

Figure 5.7 Report Fake Feature on Dashboard

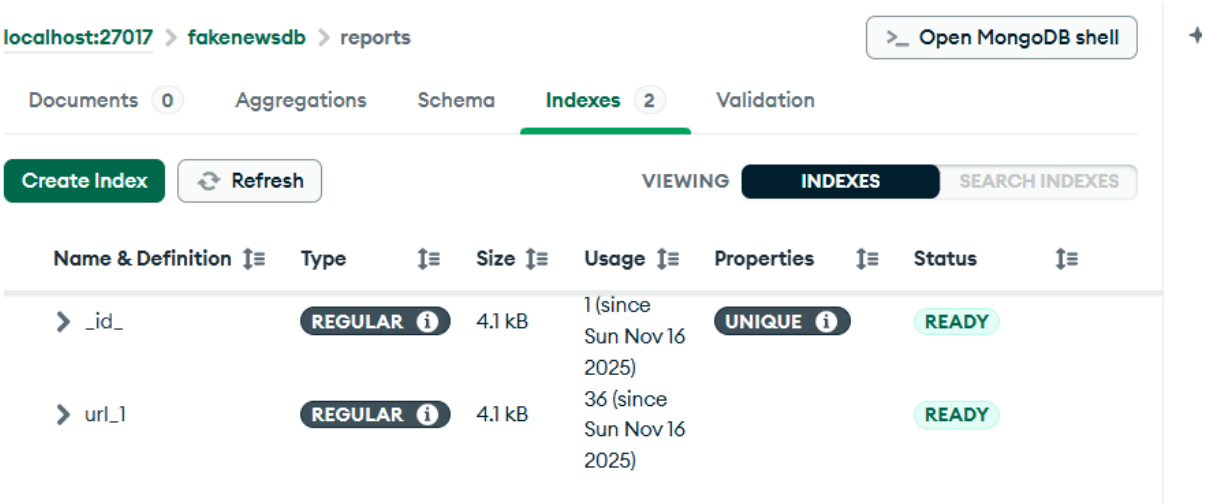

Figure 5.8 Reported articles store in database

5.9 System Performance and Efficiency

The system performed efficiently under testing:

Table 5.1 Response Time

Operation	Avg Time
News Fetch	1.2 sec
ML Classification	0.6 sec
Summarization	1.0 sec
Dashboard Load	<3 sec

5.9.1 Database Performance

- URL indexing improved duplicate checking
- Read/write operations executed in milliseconds
- MongoDB handled over 10,000 documents without lag

5.10 Discussion

Based on results from all modules:

Strengths

- Highly accurate BERT-based detection and Hugging Face .
- Reliable MongoDB storage
- User-friendly interface
- Secure login and session handling
- Real-time fact checking available

Identified Challenges

- Some APIs have rate limits
- Fact-check API sometimes returns limited evidence