American International University-Bangladesh (AIUB)
Department of Computer Science
Faculty of Science &Technology (FST)
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AI-Powered Fake News Detection System for Social Media

Software Requirement Engineering

Sec: **A**

Project submitted

By

Md Mehedi Hasan Polash (22-46566-1)
Tridib Sarkar (22-46444-1)
Shahriar Rahman Dipto (22-46622-1)

Checked By Industry Personnel (Optional)

Name:

Designation:

Company:

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1. PROBLEM DOMAIN

- **Background to the Problem**

In today's digital era, social media platforms such as Facebook and Twitter (X) have become the fastest channels for information sharing. However, this has also created a serious challenge—the rapid spread of fake news and misinformation. False information is often deliberately circulated during political campaigns, elections, natural disasters, or public health crises. As a result, it creates confusion, panic, and even social unrest among the general public.

Currently, existing social media platforms allow users to freely share content but lack effective mechanisms to verify the credibility of information. This leads to a situation where misinformation spreads quickly and frequently overshadows factual news. The problem is particularly severe in developing countries like Bangladesh, where many people consume and share news without proper fact-checking.

The core issue is not the absence of technology, but rather the lack of user-friendly, automated, and integrated solutions that can verify the credibility of content in real-time. Even though Artificial Intelligence (AI) and Natural Language Processing (NLP) technologies are widely available today, they are not being effectively utilized within social media platforms for misinformation detection.

Fake news not only influences personal opinions but also threatens democratic processes, public health awareness, and social stability. Therefore, there is an urgent need for a reliable, user-friendly, and automated solution that can detect fake news instantly and guide users towards verified and trustworthy information.

- **Solution to the Problem**

The proposed **AI-Powered Fake News Detection System for Social Media** offers an innovative solution to the challenges of misinformation by integrating artificial intelligence directly into existing platforms such as Facebook and Twitter (X). Instead of relying solely on manual reporting or third-party fact-checkers, this system empowers users to instantly evaluate the credibility of online content.

Key features include:

- **Credibility Scoring:** The system scans shared posts, links, and articles in real time, assigning a credibility score based on source reputation, cross-referencing with trusted databases, and AI-driven language analysis.

- **Verified Alternatives:** Along with the score, the system provides links to verified sources covering the same topic, enabling users to access accurate information without delay.
- **Community Fact-Check Gamification:** Users can report suspicious content and earn points, badges, or rankings for contributing to misinformation detection, creating a crowd-powered defense mechanism.
- **User-Friendly Integration:** The system is designed as a seamless tool within the social media interface, ensuring that users of all technical backgrounds can use it easily.
- **Adaptive AI Engine:** The system continuously learns from user reports and feedback, improving its detection accuracy over time.

By simplifying how misinformation is detected and countered, the system minimizes the risk of confusion, panic, or manipulation during critical times such as elections or public health emergencies. It ensures that even less-informed users can make data-driven decisions and trust the information they consume.

Furthermore, by combining AI automation with community engagement, this solution builds trust, reduces misinformation spread, and strengthens democratic processes. Beyond societal benefits, the system creates business opportunities by offering licensing options for media houses, NGOs, and government agencies committed to combating fake news.

2. SOLUTION DESCRIPTION

- **System Features**

1. Sign Up

1.1. The system shall provide a user registration interface for new users to create an account.
1.2. During sign up, users shall be required to enter a valid email address, unique username, and secure password.
1.3. The system shall validate the uniqueness of the username and email to prevent duplicates.
1.4. The password shall meet security standards (minimum length, uppercase, lowercase, number, special character).
1.5. The system shall store user details securely in the database using encryption.
1.6. In case the email is already registered, the system shall prompt the user to use another email.
1.7. The system shall send a verification email or OTP message for account confirmation.
1.8. Only after verification, the account shall be activated and allowed to log in.
1.9. The system shall provide error messages for invalid or incomplete input during sign up.
1.10. After successful account creation, the user shall be redirected to the login page.

Priority Level: High
Precondition: None

2. Login

2.1. The system shall provide a login interface for existing users with username/email and password.
2.2. The system shall verify the entered details with the database records.
2.3. If the login is valid, the user shall be redirected to their dashboard.
2.4. In case of incorrect username or password more than 2 times, the system shall send a warning email or SMS with location and device info.
2.5. If login fails more than 6 times, the account shall be blocked for 30 minutes.
2.6. The system shall notify the user of suspicious login attempts from new devices.
2.7. The system shall provide a "Remember Me" option for personal devices.
2.8. The system shall allow login through secure social accounts (optional).
2.9. The system shall log all login activity for security tracking.
2.10. The system shall display proper error messages for invalid login attempts.

Priority Level: High
Precondition: User has a valid registered account.

3. Recover Account

3.1. The system shall provide a "Recover Account" option on the login page.
3.2. Users shall enter their registered email/username/phone number to recover.
3.3. The system shall verify this information with the database.
3.4. If valid, the system shall send a recovery link or OTP to the registered email/phone.
3.5. The user must verify the link/OTP within a time limit (e.g., 15 minutes).
3.6. After verification, the system shall allow the user to reset their password.
3.7. New passwords must follow the same security rules as sign up.
3.8. The database shall be updated with the new password (encrypted).
3.9. The system shall notify the user that the password has been successfully reset.
3.10. All recovery attempts shall be logged for security purposes.

Priority Level: Medium
Precondition: User has a registered account with valid email/phone.

4. Fake News Detection

4.1. The system shall scan posts, articles, and shared links in real time.
4.2. AI algorithms shall analyze language patterns and detect misinformation signals.
4.3. The system shall assign a credibility score (0–100%) for each scanned item.
4.4. Results shall be shown as: Reliable (green), Questionable (yellow), Fake (red).
4.5. The system shall cross-check with fact-checking databases and trusted sources.
4.6. Suspicious posts shall be flagged with a warning label visible to the user.
4.7. Users shall be able to click on flagged posts to see a detailed credibility analysis.

4.8. The system shall continuously update its detection model for accuracy.
4.9. The system shall allow users to give feedback on flagged items to improve AI.
4.10. All detection logs shall be stored for future analytics and reporting.

Priority Level: High
Precondition: User is logged into the system.

5. Verified Alternatives

5.1. When a post is flagged as questionable or fake, the system shall provide verified news alternatives.
5.2. Verified alternatives shall be fetched from trusted news portals and fact-checkers.
5.3. At least 2–3 alternative links shall be displayed for each flagged item.
5.4. Verified alternatives shall be highlighted with "Trusted Source" tags.
5.5. Users shall have the option to bookmark verified alternatives.
5.6. Summaries of verified alternatives shall be shown alongside links.
5.7. Verified sources shall be updated dynamically in real time.
5.8. Sources shall be categorized (e.g., Government, NGO, International Media).
5.9. Verified alternatives shall always open in a secure browser tab/window.
5.10. User interactions with verified links shall be logged for analytics.

Priority Level: High
Precondition: Detection module must be active.

6. Community Fact-Check

6.1. The system shall allow users to report suspicious content.
6.2. Reported items shall include reason, comments, and optional screenshots.
6.3. Community reports shall be combined with AI analysis.
6.4. Each report shall contribute to the credibility score adjustment.
6.5. Users shall earn points and badges for contributing to fact-checking.
6.6. Leaderboards shall display top contributors.
6.7. Trusted users may be given special verification roles.
6.8. Abusive/misleading reports shall be flagged and penalized.
6.9. The system shall allow users to view their reporting history.
6.10. Reports shall be reviewed periodically to prevent misuse.

Priority Level: Medium
Precondition: User must be registered and logged in.

7. Adaptive AI Engine

7.1. The system shall continuously learn from flagged items and user feedback.
7.2. Machine learning models shall be retrained periodically with new data.
7.3. The system shall improve detection accuracy over time.
7.4. The AI shall support multiple languages.

7.5. Accuracy metrics shall be monitored (precision, recall, F1-score).
7.6. Updates to the AI model shall be seamless and without downtime.
7.7. The system shall explain why a post was flagged (explainable AI).
7.8. Historical versions of AI models shall be stored for rollback if needed.
7.9. Only anonymized user data shall be used for AI training.
7.10. The system shall ensure ethical AI use and transparency.

Priority Level: High
Precondition: Detection and reporting modules must be enabled.

8. User Dashboard

8.1. The system shall provide a personalized dashboard after login.
8.2. The dashboard shall display the number of posts analyzed by the system.
8.3. Users shall be able to view the percentage of reliable vs. fake content detected.
8.4. The dashboard shall show a history of the user's reported posts.
8.5. Gamification progress (points, badges, rankings) shall be visible on the dashboard.
8.6. The system shall provide tips and educational content on identifying misinformation.
8.7. The dashboard shall allow customization of notification preferences.
8.8. The dashboard shall display credibility trends over time for user activity.
8.9. The system shall provide charts/graphs for easy visualization of data.
8.10. All dashboard data shall be refreshed dynamically in real time.

Priority Level: Medium
Precondition: User must be logged into their account.

9. Agency and Media Integration

9.1. The system shall provide an integration interface for government agencies, NGOs, and media organizations.
9.2. Agencies shall be able to analyze news posts and articles using the system's AI engine.
9.3. Agencies shall have access to analytics dashboards for monitoring misinformation trends.
9.4. The system shall support secure API connections for external platforms.
9.5. Premium subscription plans shall be offered for organizations with advanced needs.
9.6. Agencies shall be able to download analytical reports in CSV/PDF formats.
9.7. The system shall allow agencies to verify their official news and mark them as "Trusted."
9.8. Organizations shall receive alerts when large volumes of fake news are detected.
9.9. The system shall allow collaborative partnerships with fact-checking organizations.
9.10. All agency activities shall be logged for auditing and accountability.

Priority Level: High
Precondition: Agency/organization must have a registered verified account.

10. Privacy and Security

10.1. The system shall encrypt all user data in storage and during transmission.
10.2. Passwords shall be hashed and stored securely.
10.3. The system shall comply with international privacy standards (GDPR, CCPA).
10.4. User reports and activities shall remain anonymous unless explicitly shared.
10.5. The system shall provide users with the ability to delete their accounts and data permanently.
10.6. The system shall log all critical security events for auditing purposes.
10.7. Only anonymized data shall be used for AI training.
10.8. The system shall include protection against malicious attacks such as SQL injection, XSS, and brute force.
10.9. The system shall notify users in case of data breaches or suspicious activity.
10.10. Privacy policies shall be clearly communicated to users during registration.

Priority Level: High
Precondition: None

11. Notification System

11.1. The system shall notify users when a scanned post is flagged as questionable or fake.
11.2. Notifications shall appear as pop-ups within the system and as push/email alerts (if enabled).
11.3. Users shall be able to customize notification preferences from their dashboard.
11.4. The system shall provide daily/weekly reports of credibility analysis.
11.5. Users shall receive notifications when they earn badges or ranking upgrades.
11.6. Agencies shall receive alerts when mass misinformation campaigns are detected.
11.7. The notification system shall use secure communication protocols.
11.8. All notifications shall be logged for user reference.
11.9. Notifications shall include quick links to verified alternatives.
11.10. Users shall have the option to disable non-critical notifications.

Priority Level: Medium
Precondition: User is registered and logged in.

12. Search and Filtering

12.1. The system shall provide a search bar for users to manually check the credibility of specific news articles or links.
12.2. Users shall be able to filter results by date, source, or credibility score.
12.3. The system shall display search results with credibility scores and explanations.
12.4. Users shall be able to view trending misinformation topics.
12.5. Advanced filters shall allow users to view content flagged by the community.
12.6. Agencies shall be able to search across broader datasets for analytical purposes.
12.7. The system shall allow bookmarking of search results for future reference.
12.8. Search results shall prioritize verified and trustworthy sources.

12.9. All search queries shall be stored in a secure log for system learning.
12.10. The system shall allow exporting of search results for analysis.

Priority Level: Medium
Precondition: Detection module must be active.

13. Reporting and Analytics

13.1. The system shall generate reports on detected misinformation trends.
13.2. Users shall be able to view personal reports on their activity and credibility contribution.
13.3. Agencies shall receive advanced analytical dashboards with visual graphs.
13.4. Reports shall include breakdowns of detected fake vs. real content.
13.5. The system shall allow exporting of reports in PDF/CSV formats.
13.6. Agencies shall be able to generate custom reports for specific time ranges.
13.7. Reports shall highlight top fake news topics and their sources.
13.8. Users shall have access to simplified, easy-to-read reports.
13.9. Reports shall be automatically updated on a weekly and monthly basis.
13.10. The system shall provide predictive analytics on misinformation patterns.

Priority Level: High
Precondition: User or agency must be logged in.

14. Multi-Language Support

14.1. The system shall support multiple languages for analyzing and detecting misinformation.
14.2. Users shall be able to select their preferred language during sign up or in settings.
14.3. The system shall automatically detect the language of the content being scanned.
14.4. Language packs shall be continuously updated to improve accuracy.
14.5. The system shall support translation of flagged posts into the user's chosen language.
14.6. Verified alternatives shall be displayed in the user's selected language when available.
14.7. The system shall use AI-based translation engines to interpret non-English content.
14.8. Users shall be able to switch languages at any time from their dashboard.
14.9. Community fact-checking shall allow input in multiple languages.
14.10. Reports and analytics shall include language-specific breakdowns.

Priority Level: High
Precondition: User is registered and has selected a preferred language.

15. Educational Resource Center

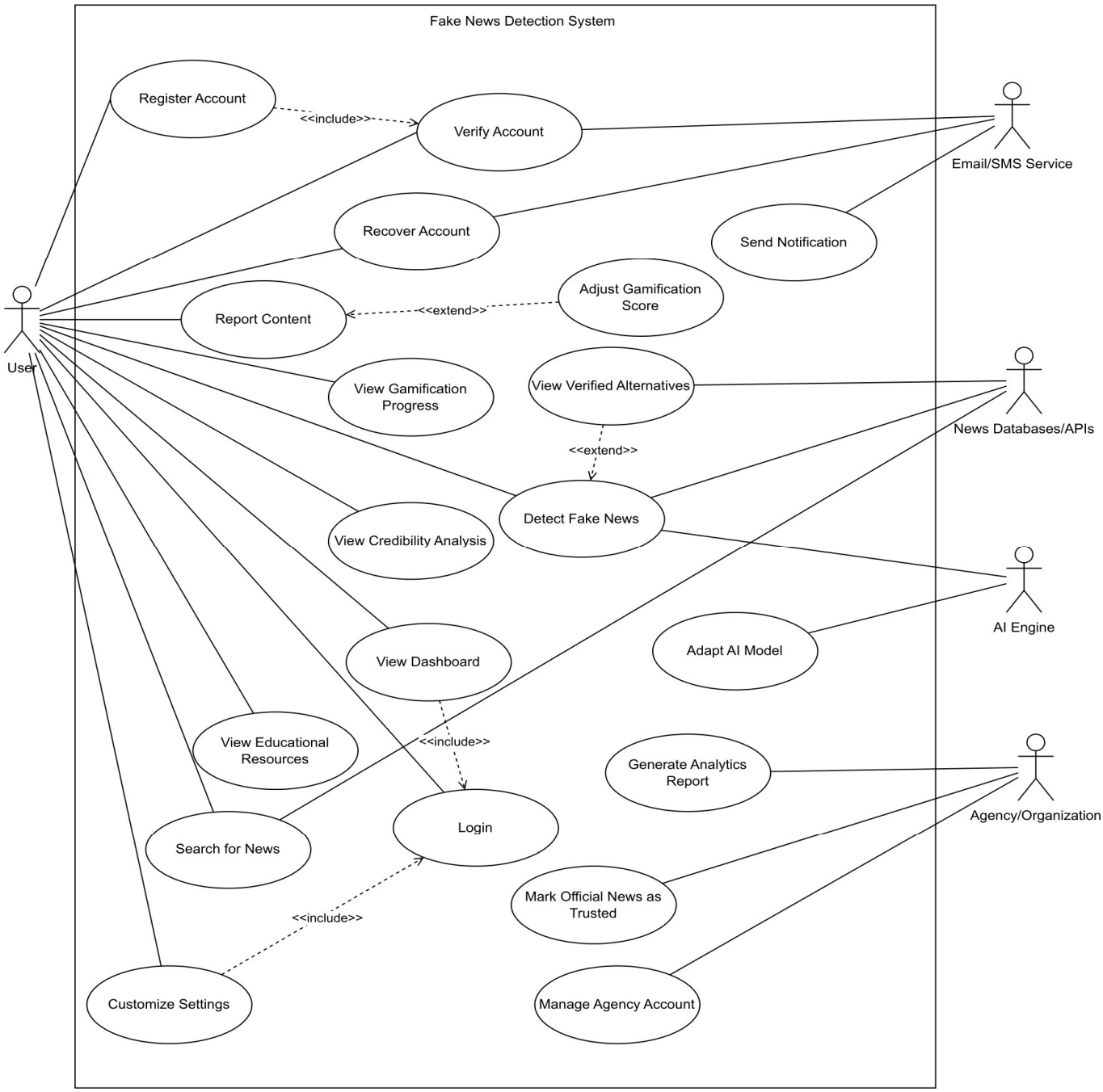
15.1. The system shall provide a dedicated section for educating users on misinformation.
15.2. The resource center shall include articles, tutorials, and videos on identifying fake news.
15.3. Users shall be able to access real-world case studies of misinformation campaigns.
15.4. The system shall provide interactive quizzes to test user knowledge.
15.5. Users shall earn points or badges for completing educational modules.
15.6. Agencies and NGOs shall be able to contribute verified learning resources.

15.7. The resource center shall highlight trending fake news examples for awareness.
15.8. Educational content shall be updated regularly to remain relevant.
15.9. The system shall provide notifications about new resources available.
15.10. The educational center shall be accessible without login for public awareness.

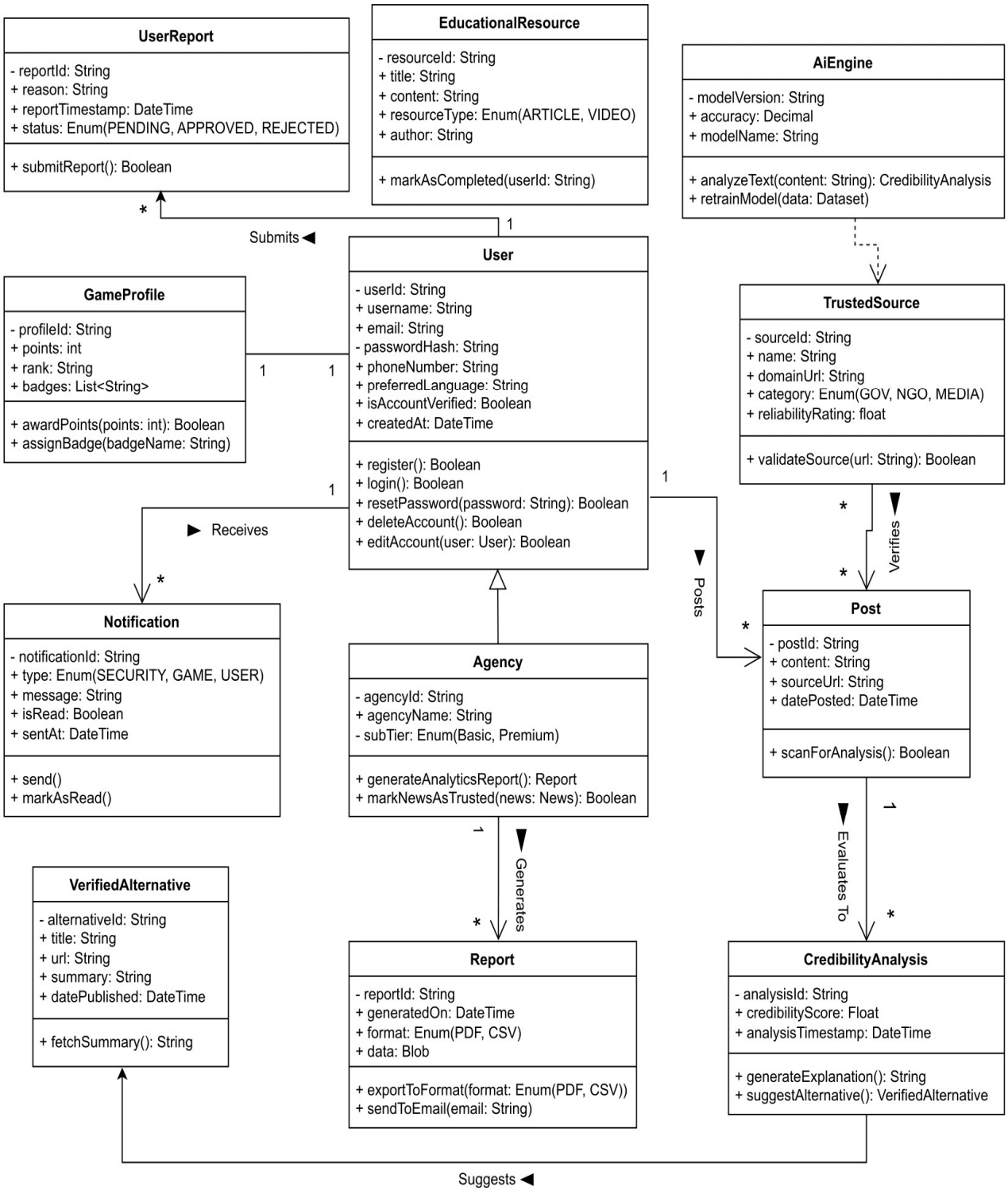
Priority Level: Medium
Precondition: None (open to all users, but progress tracking requires login).

- **UML Diagrams**

2.2.1 Use Case Diagram:



2.2.2 Class Diagram:



2.2.3 ER Diagram:

2.2.4 UI Design:

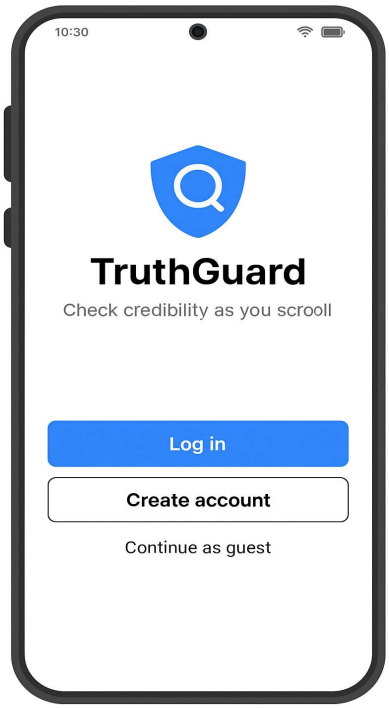


Figure-1: Welcome Screen

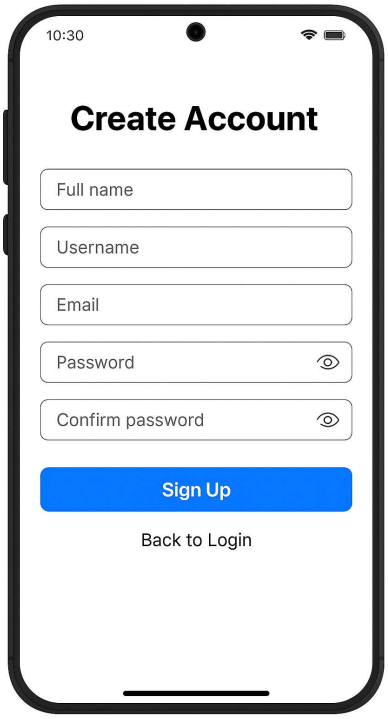


Figure-2: Create Account

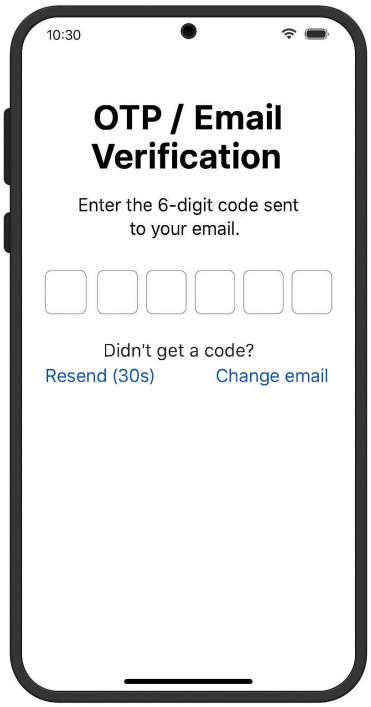


Figure-3: Verification Screen

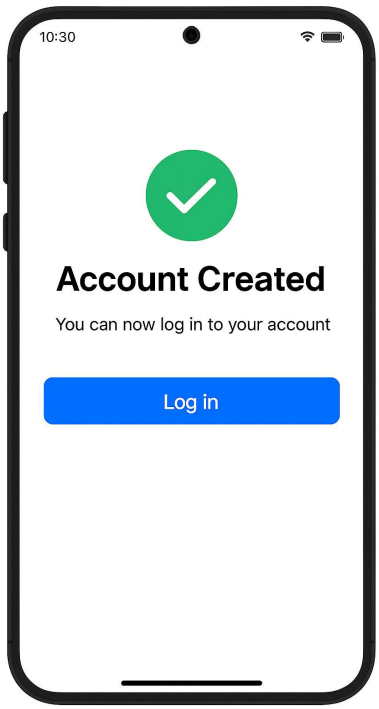


Figure-4: Account Created Successfully

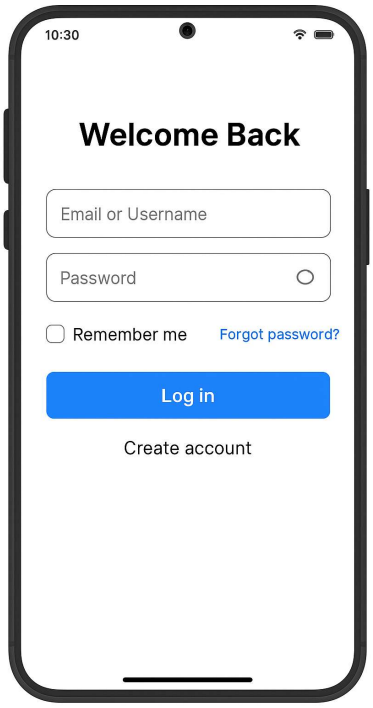


Figure-5: Login Screen

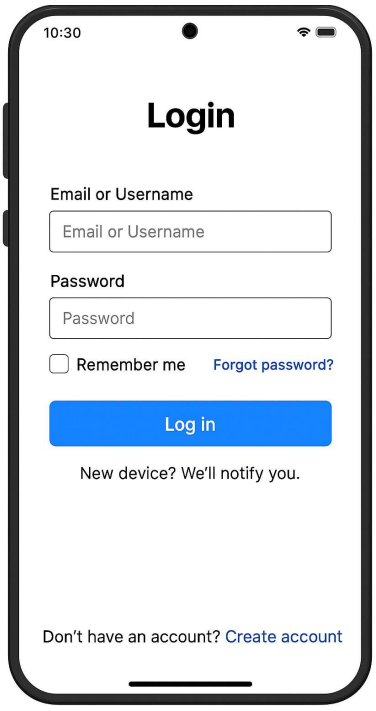


Figure-6: Login Screen

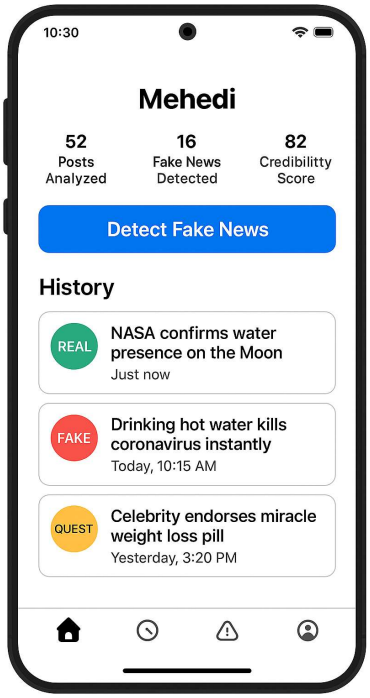


Figure-7: After Login Dashboard

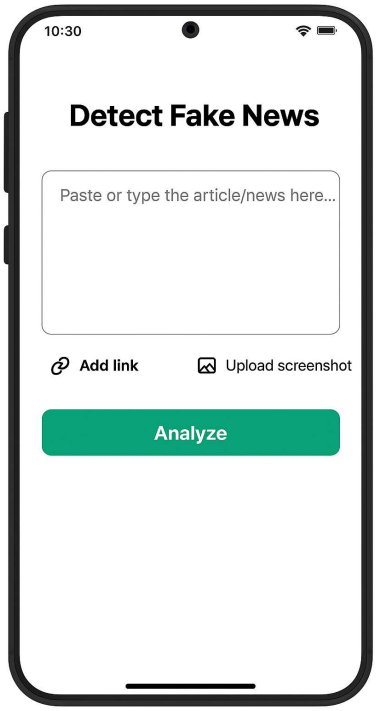


Figure-8: Detect any News

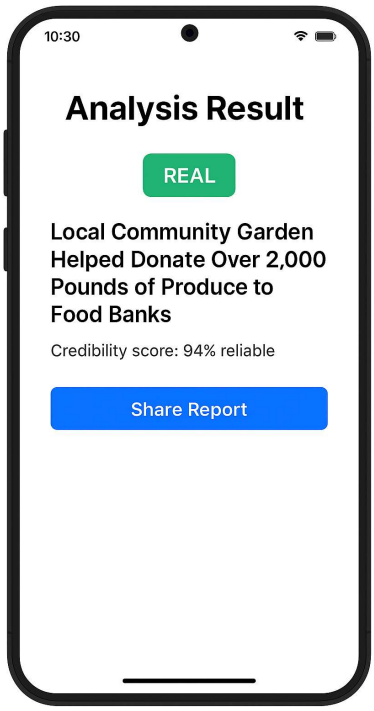


Figure-9: Analysis Screen

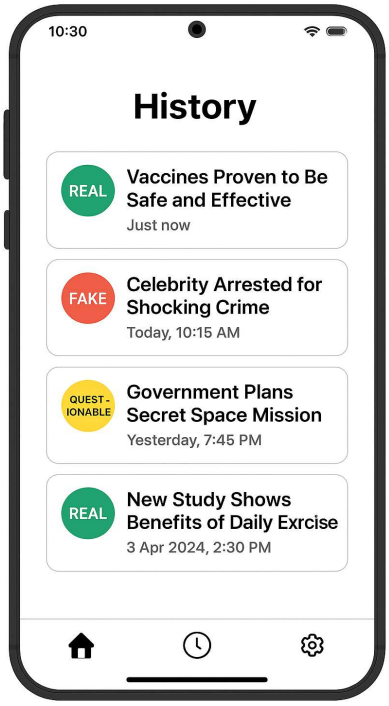


Figure-10: History Dashboard

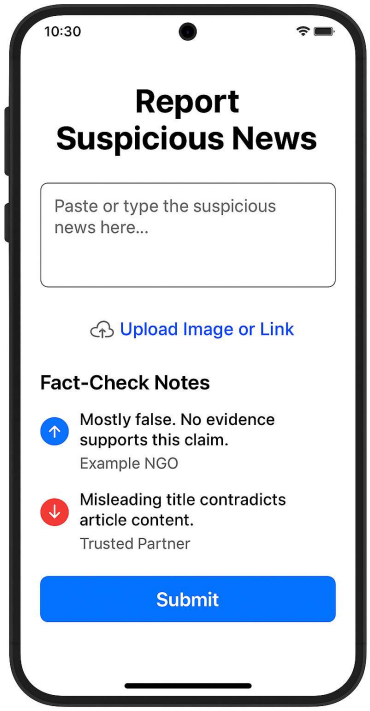


Figure-11: Report any News

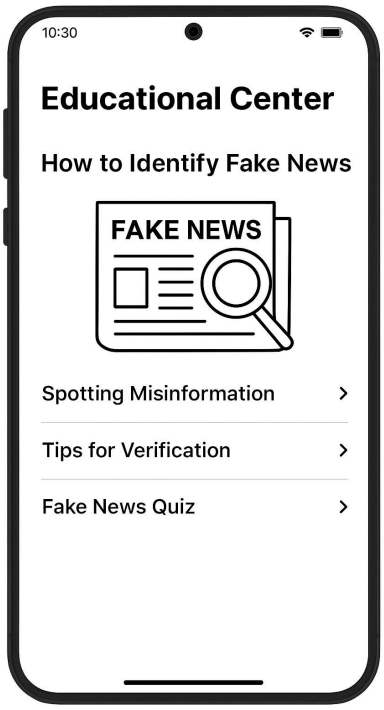


Figure-12: Educational Center for Identifying Fake News

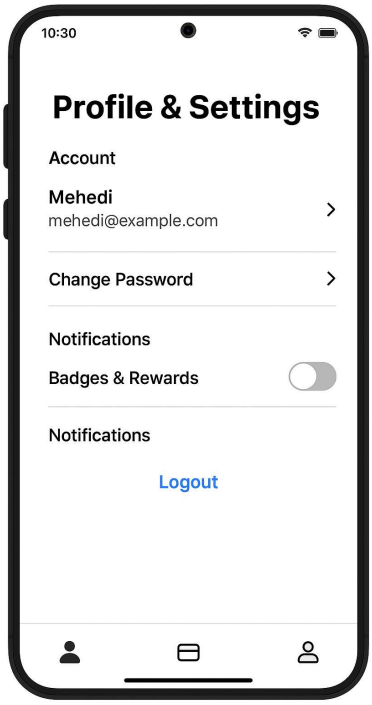


Figure-13: Settings Dashboard

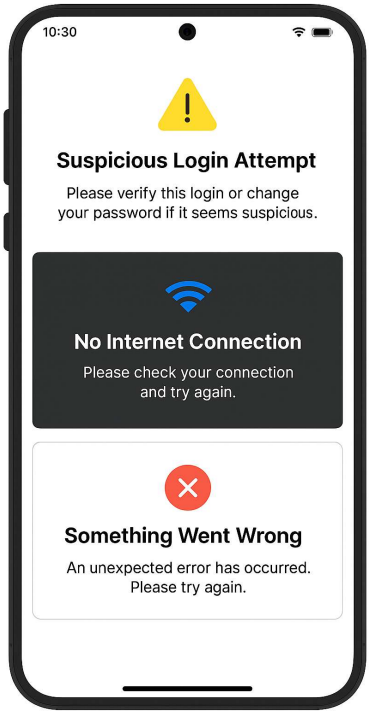


Figure-14: Error States & Notifications

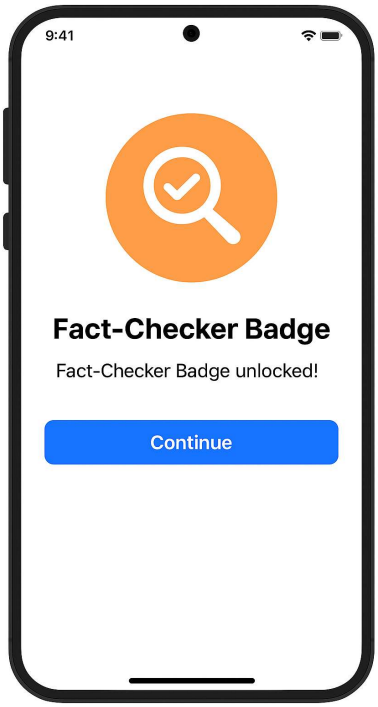


Figure-15: Gamification & Rewards

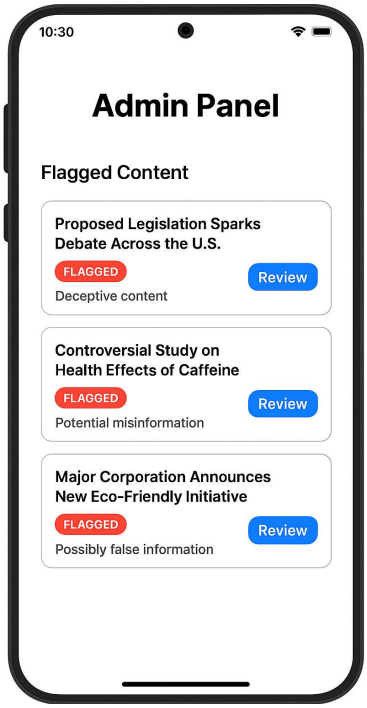


Figure-16: Admin/Moderator Panel

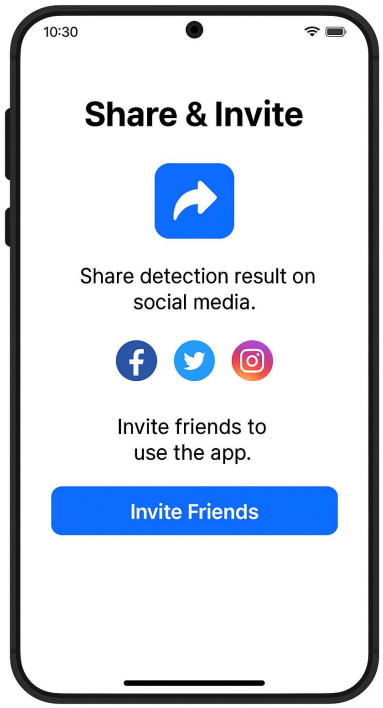


Figure-17: Social Sharing & Integration

3. Social Impact

The **AI-Powered Fake News Detection System for social media** is designed not only as a technological solution but also as a social safeguard in today's information-driven world. Its impact extends beyond individual users to entire communities, governments, and democratic institutions.

1. **Strengthening Public Awareness**
    - By automatically detecting and flagging fake news, the system reduces confusion and misinformation among the general public.
    - People, especially those with limited digital literacy, will be guided toward trustworthy and verified sources.
2. **Protecting Democracy and Elections**
    - Fake news is often spread during political campaigns to manipulate voters.
    - The system minimizes such risks by exposing misinformation and promoting verified facts, thus protecting democratic processes and free choice.
3. **Safeguarding Public Health**
    - During crises such as pandemics, health misinformation spreads rapidly.

- The system directs users to official sources (e.g., WHO, government health portals), ensuring that people follow accurate medical advice.

4. **Reducing Social Panic and Violence**
    - Fake news can trigger mass panic, unrest, or even violence in communities.
    - By flagging unverified content in real time, the system prevents escalation and maintains social stability.
5. **Empowering Youth and Students**
    - Students and young social media users will gain awareness of misinformation through gamification and educational resources.
    - This encourages critical thinking and responsible digital behavior.
6. **Supporting Agencies and NGOs**
    - The system provides NGOs, media outlets, and government agencies with real-time analytics on misinformation trends.
    - This helps organizations plan awareness campaigns and respond faster to disinformation threats.
7. **Promoting Global Digital Safety**
    - With multi-language support, the system makes reliable information accessible to diverse populations.
    - It creates an international impact by addressing misinformation across borders, contributing to a safer online world.
8. **Building Trust in Technology**
    - By combining AI automation with community fact-checking, the system builds trust between people and technology.
    - Users feel empowered, knowing they are contributing to a cleaner, safer online environment.

In the long term, the project nurtures **digital literacy, civic responsibility, and social harmony**. It empowers individuals to make informed decisions, strengthens communities against misinformation, and creates a healthier information ecosystem for future generations.

4. Development Plan with Project Schedule

The development will follow the **Agile Software Development Life Cycle (SDLC)**, ensuring iterative progress and flexibility. Each sprint will be **1 week long**, and tasks will be tracked and visualized in **Jira** for efficient project management. The plan covers requirement gathering, design, development, testing, deployment, and continuous improvements.

Development Milestones

Sprint 1: Requirement Gathering & System Design

- Collect requirements from stakeholders.
- Finalize UML diagrams (Use Case, Class, ER).
- Design system architecture and database schema.

Sprint 2: Authentication & User Management

- Implement Sign Up, Login, and Recover Account features.
- Integrate encryption, OTP verification, and account security measures.

Sprint 3: Fake News Detection Engine (Core AI Module)

- Develop NLP-based detection algorithms.
- Integrate fact-checking APIs and credibility scoring mechanism.
- Create output classifications (Reliable, Questionable, Fake).

Sprint 4: Verified Alternatives & Community Fact-Check

- Provide alternative verified news sources.
- Implement reporting and gamified community fact-check system.

Sprint 5: Dashboard & Analytics

- Build user dashboard with history, gamification, and credibility trends.
- Develop reporting and analytics features for NGOs/agencies.

Sprint 6: Notifications, Security & Privacy

- Enable real-time notifications and alerts.
- Ensure GDPR/CCPA compliance with robust security mechanisms.

Sprint 7: Multi-Language Support & Educational Resource Center

- Add multiple language packs for detection.
- Provide tutorials, case studies, and quizzes to improve digital literacy.

Sprint 8: Final Integration, Testing & Deployment

- Conduct user acceptance testing (UAT).
- Fix bugs and optimize performance.
- Deploy system and prepare documentation for agencies and NGOs.

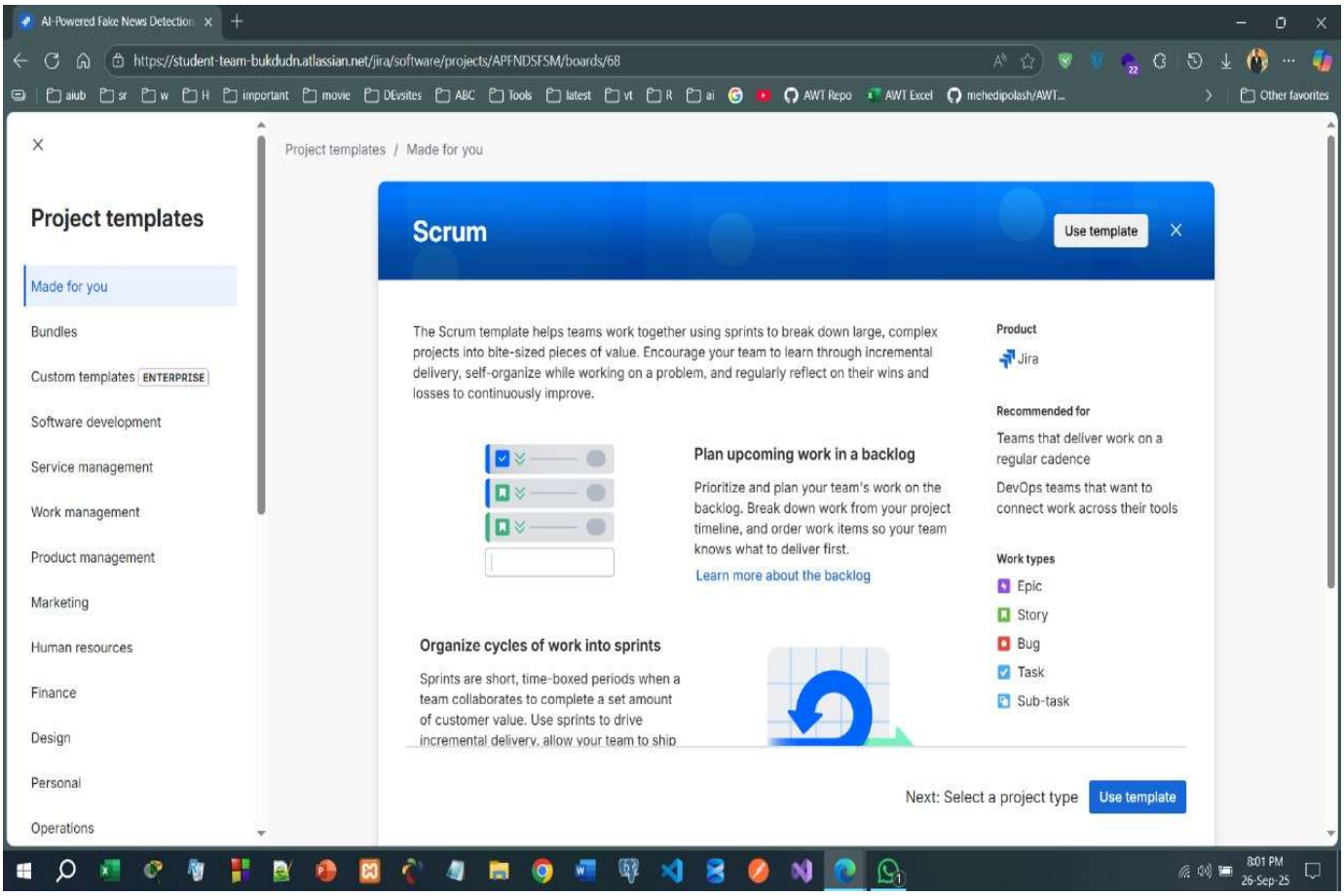


Figure-1: Jira Scrum Project Template Selection Screen

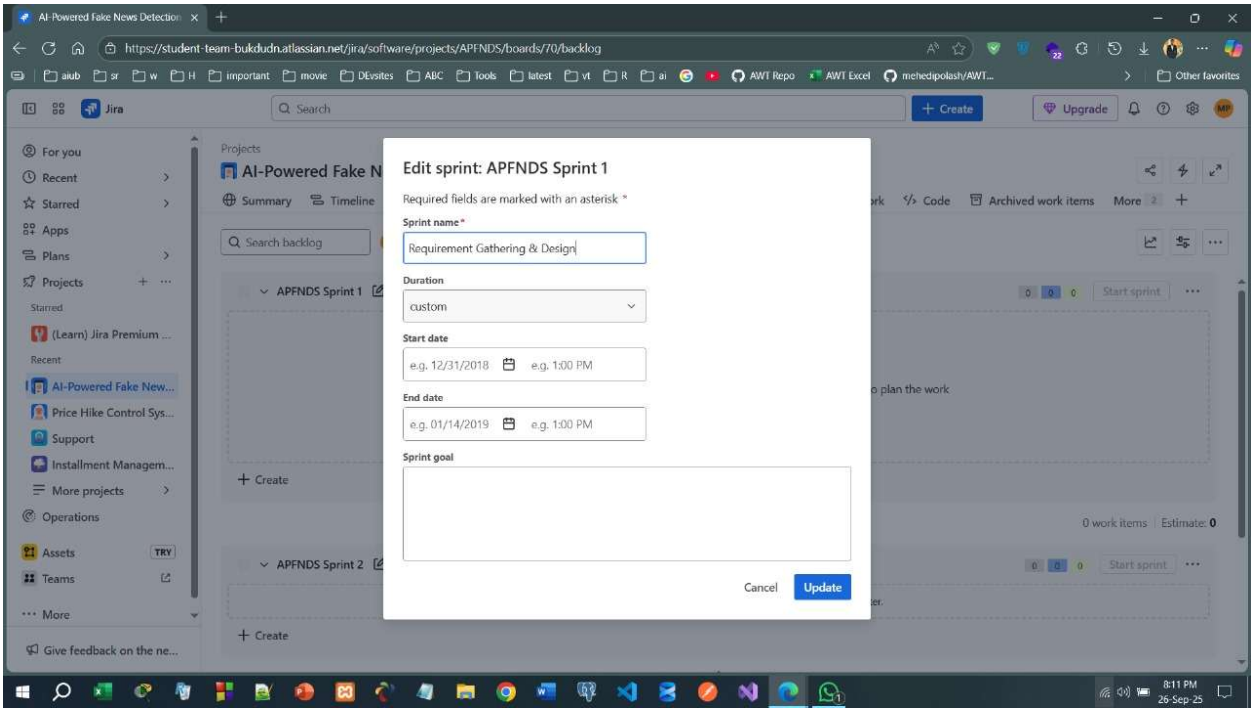


Figure-2: Edit Sprint Window in Jira (Sprint Name, Duration, Dates, and Goal Setup)

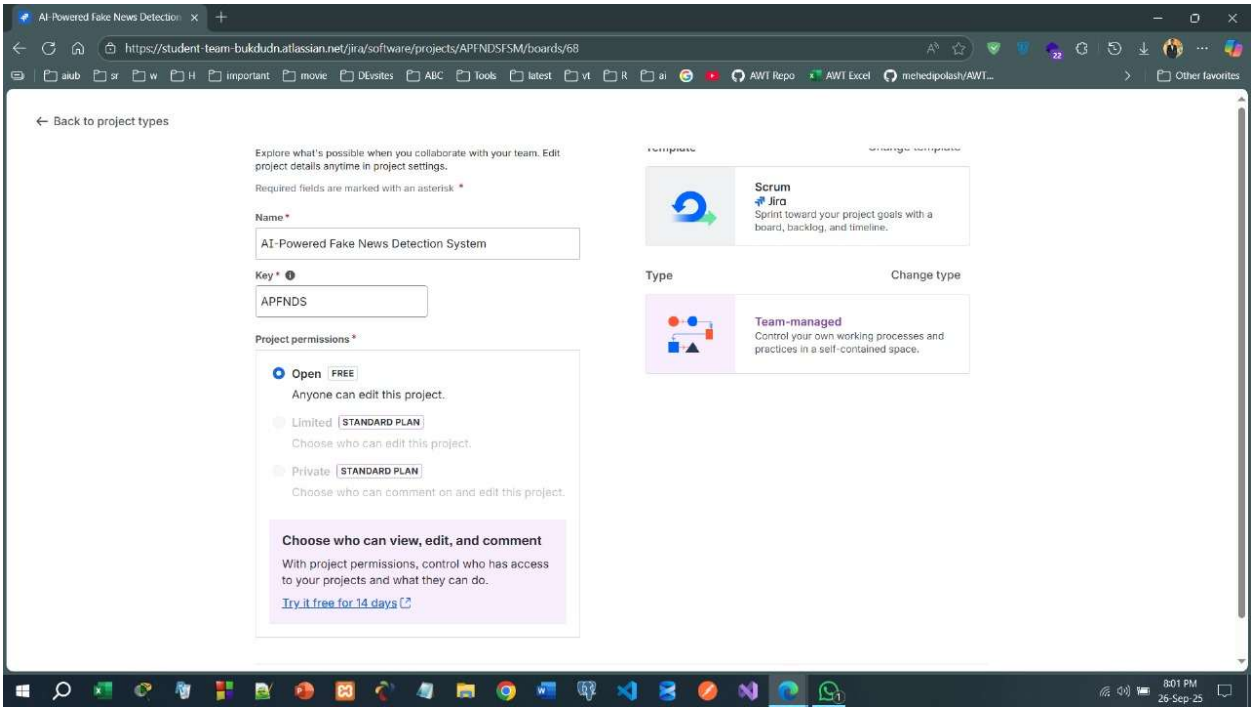


Figure-3: Jira Project Creation Screen with Scrum Template and Team-Managed Type Selection

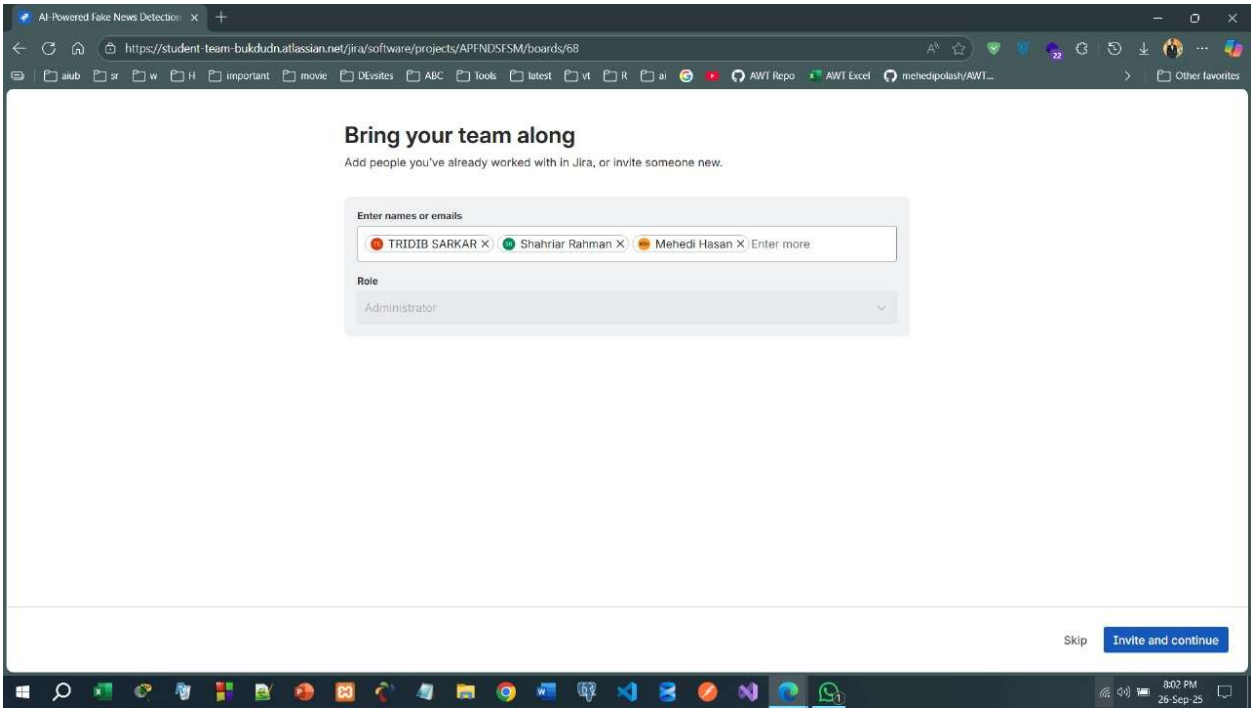


Figure-4: Jira Team Invitation Screen for Adding Members to the Project

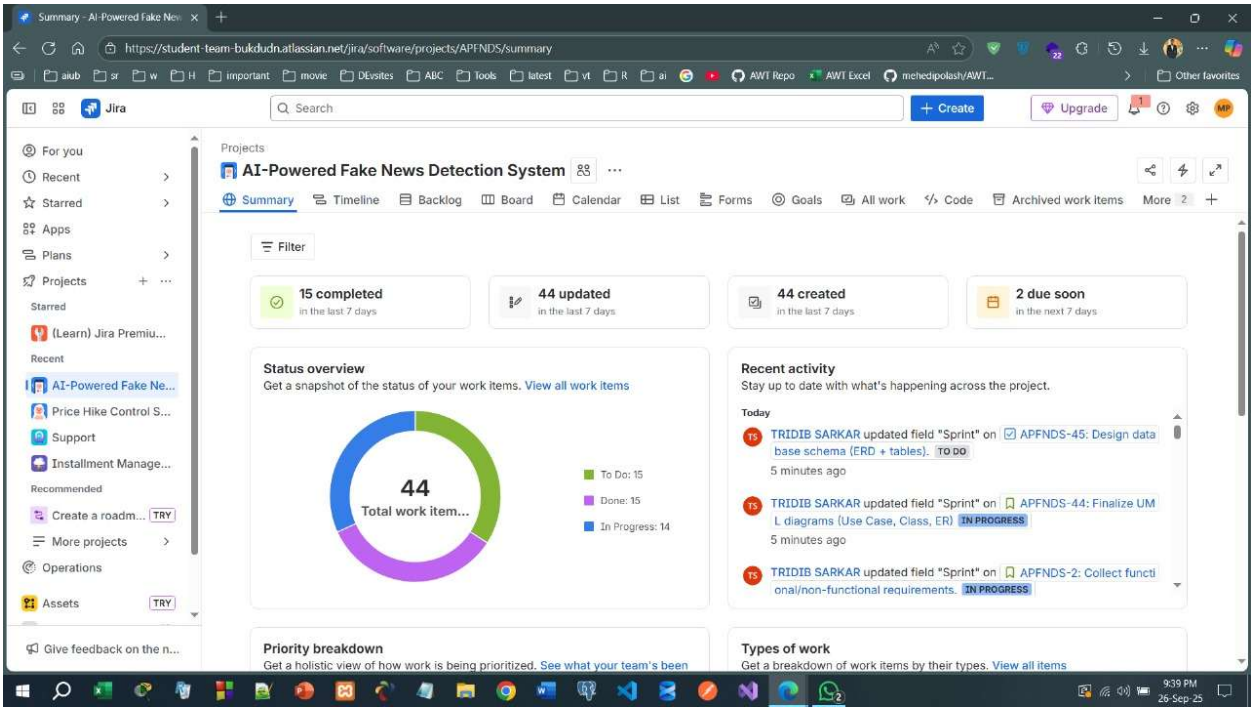


Figure-5: Jira Project Summary Dashboard with Status Overview and Recent Activity

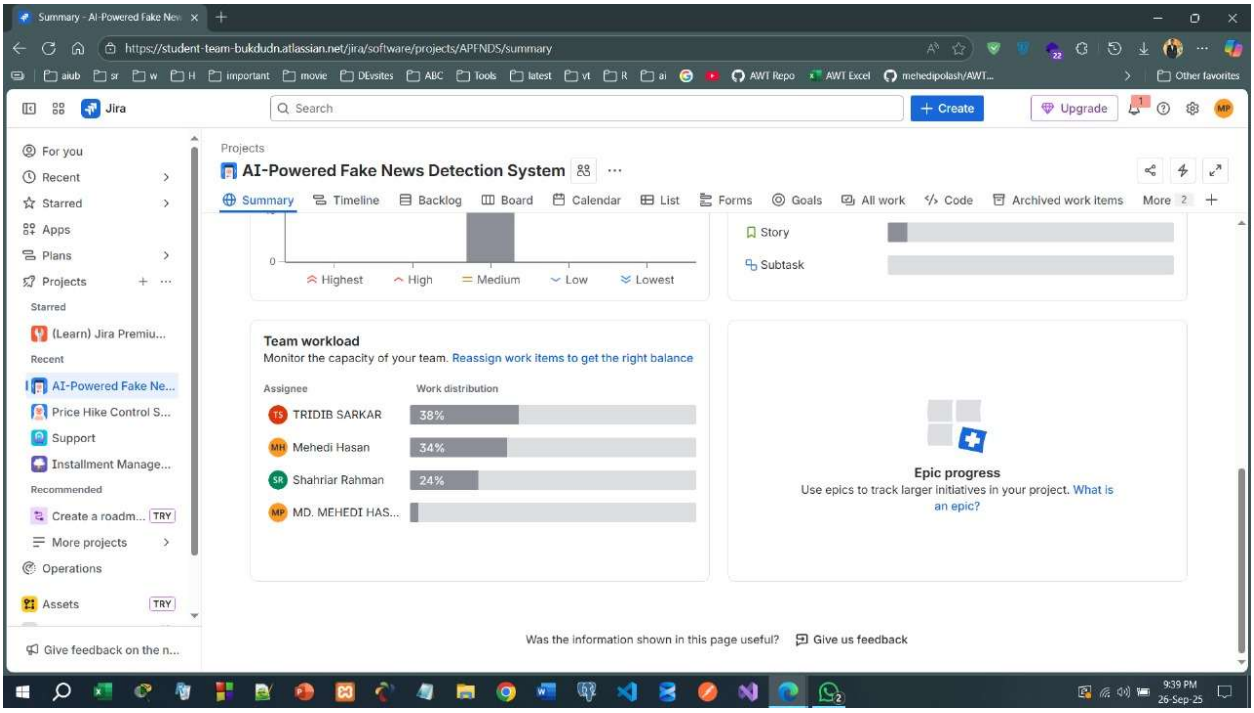


Figure-6: Jira Project Summary Showing Team Workload Distribution and Epic Progress

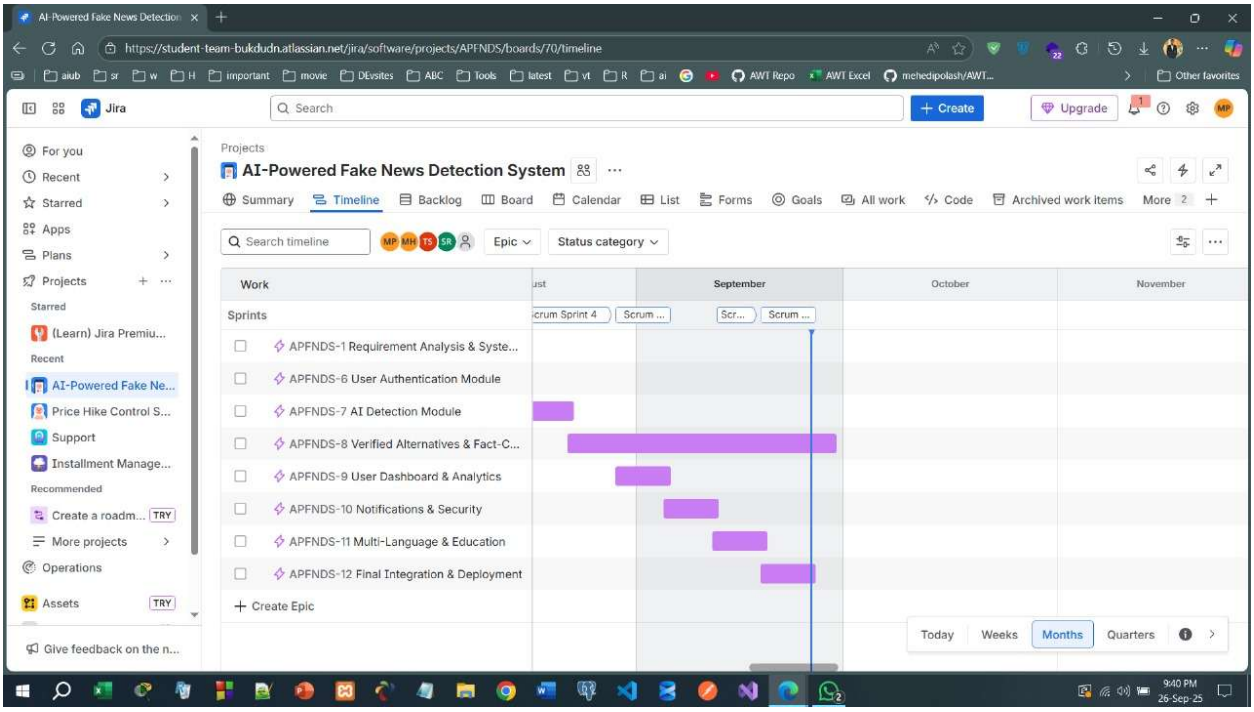


Figure-7: Jira Timeline View Displaying Epics and Sprint Schedule in Gantt Chart Format

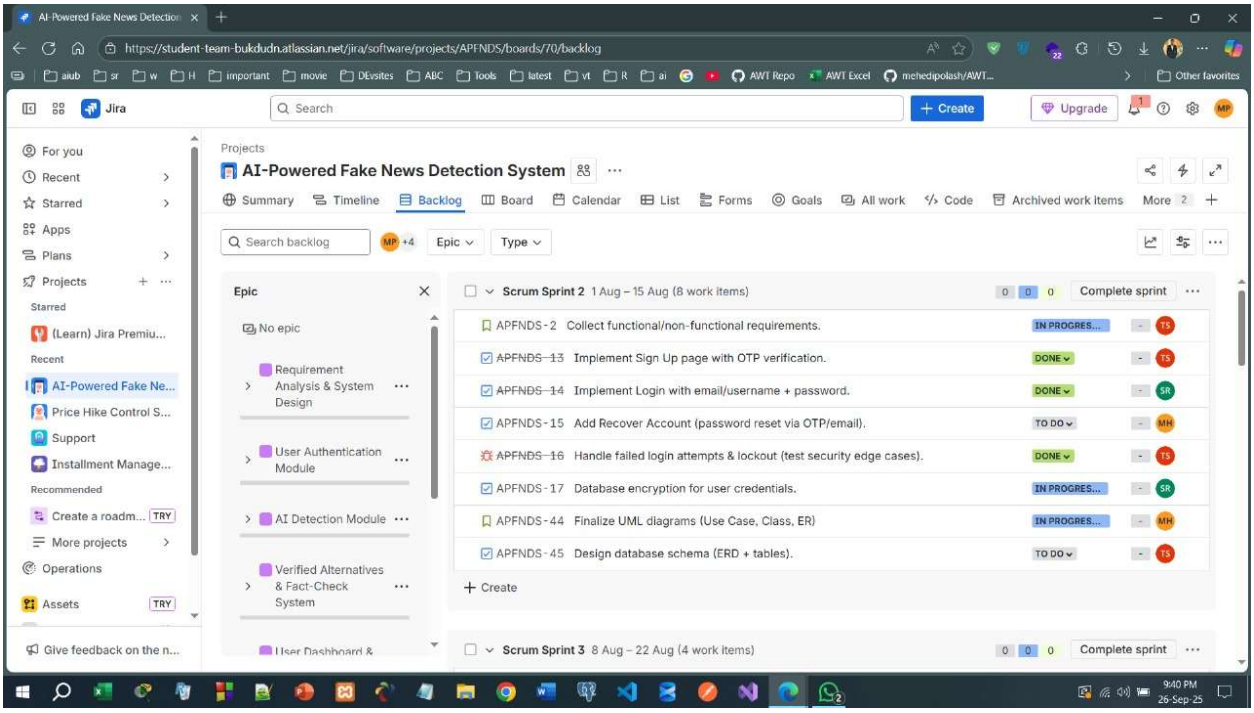


Figure-8: Jira Backlog View Showing Epics and Detailed Sprint Tasks with Status Tracking

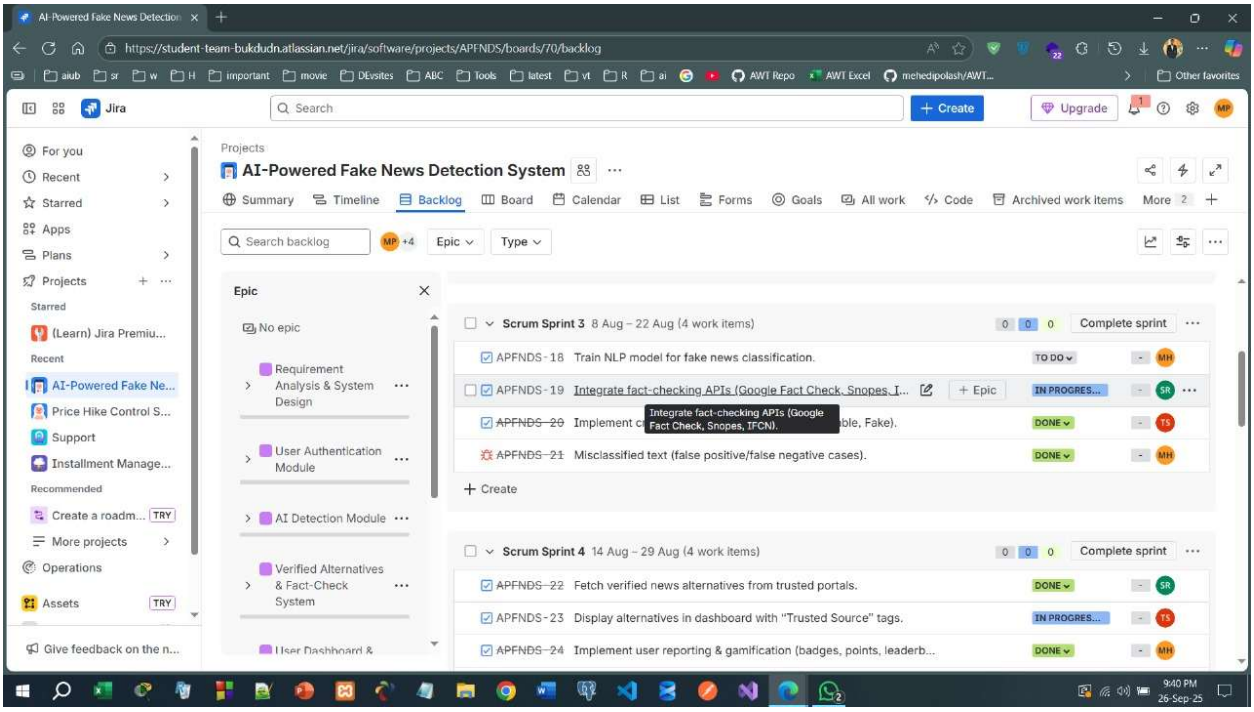


Figure-9: Jira Backlog View Highlighting Sprint 3 Tasks for AI Detection Module and Fact-Checking Integration

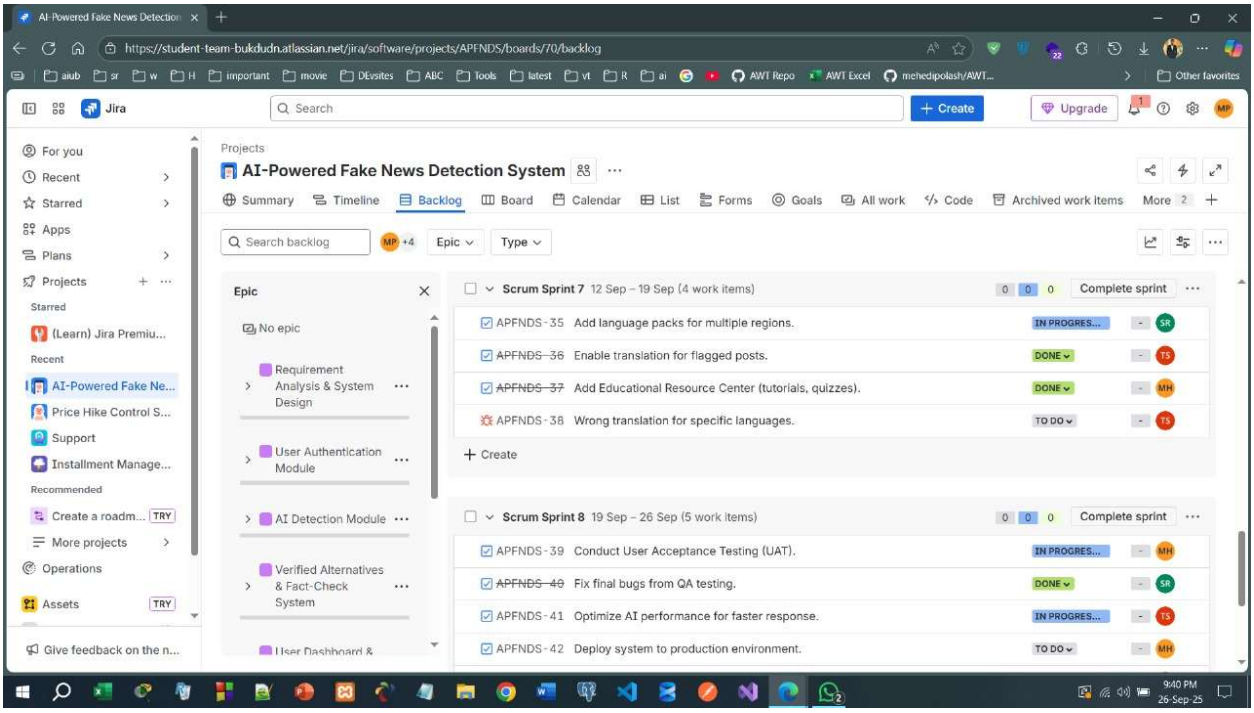


Figure-10: Jira Backlog View Displaying Sprint 7 and Sprint 8 Tasks for Multi-Language Support, Educational Center, and Final Deployment

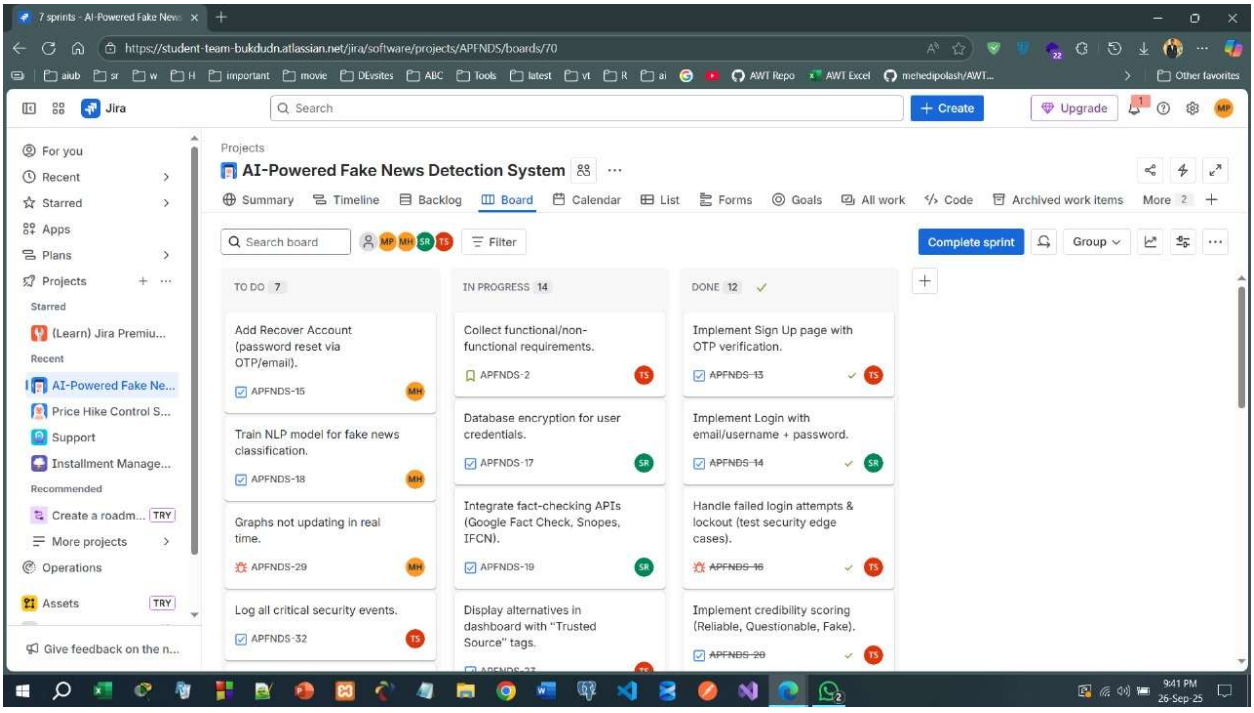


Figure-11: Jira Board View Displaying Tasks Across To Do, In Progress, and Done Columns

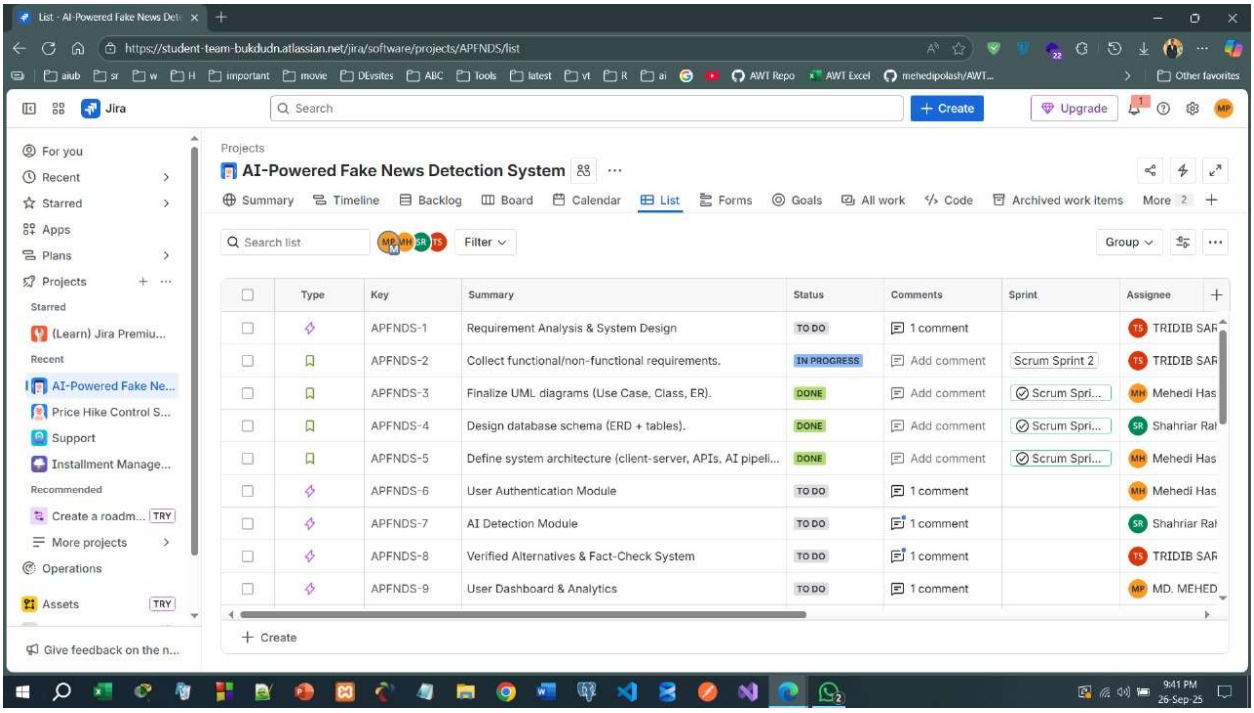


Figure-12: Jira List View Showing Issues with Type, Status, Sprint, and Assignee Details

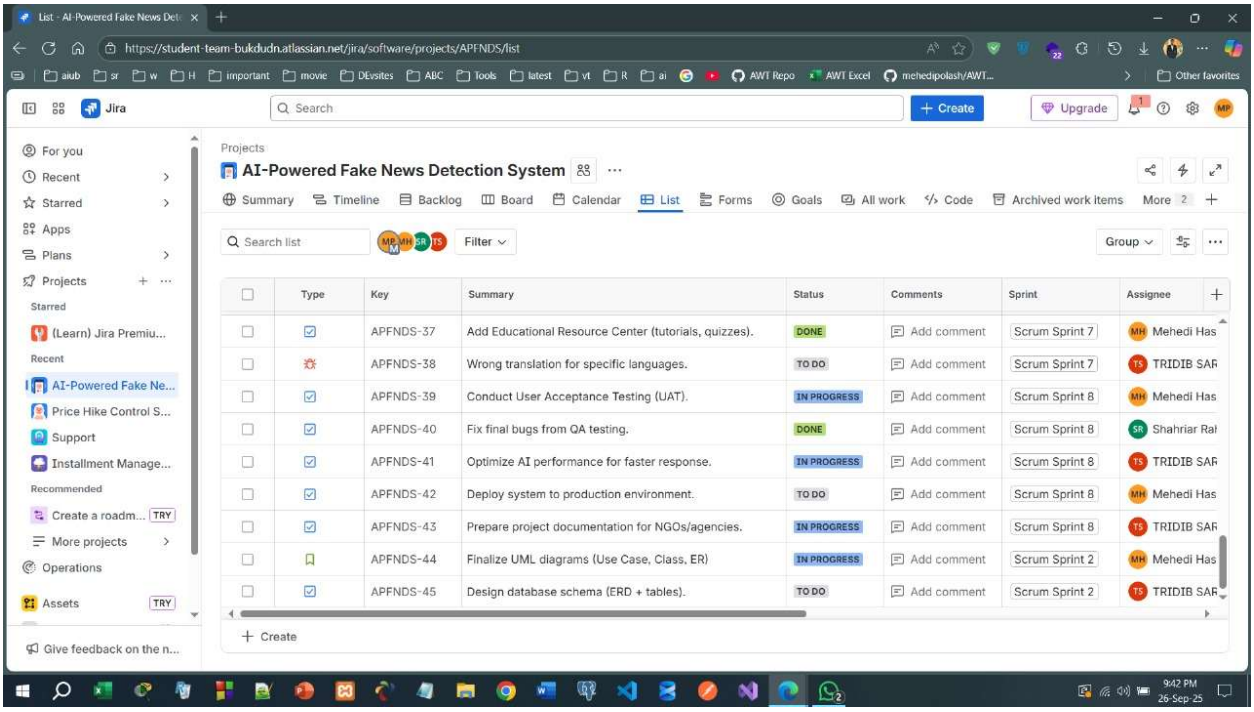


Figure-13: Jira List View Displaying Sprint 7 and Sprint 8 Tasks with Status, Sprint Assignment, and Assignees

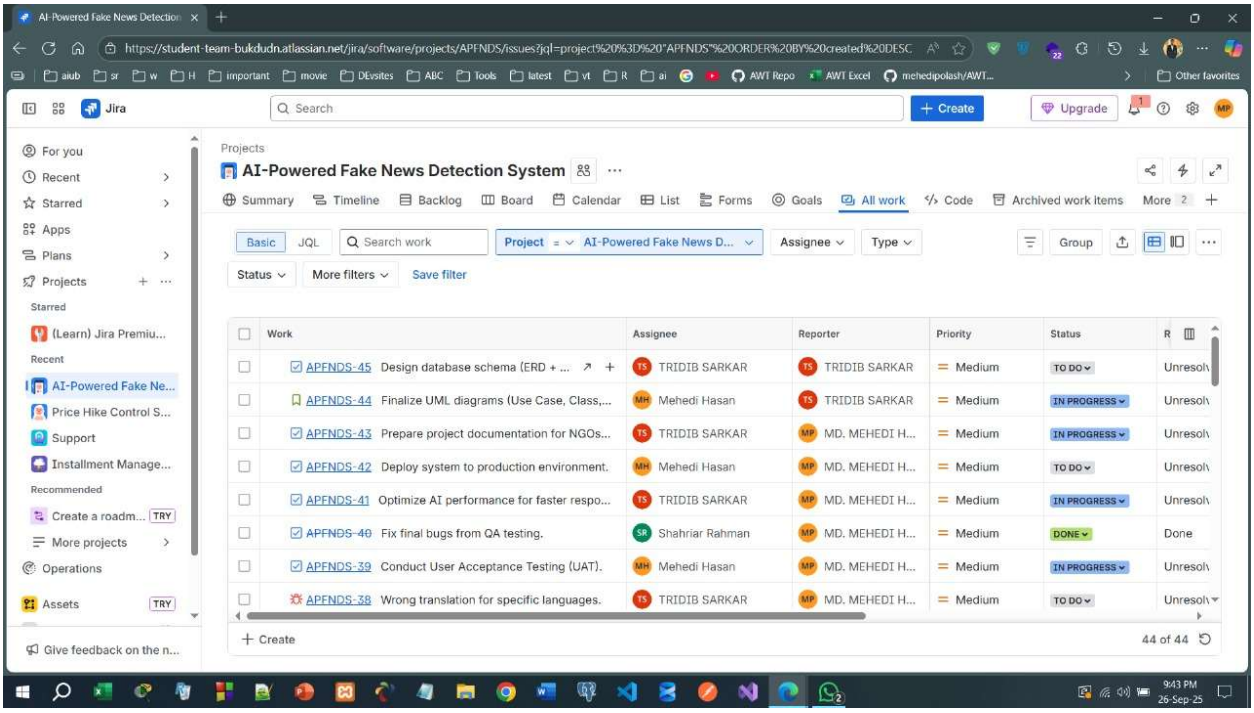


Figure-14: Jira All Work View Showing Task List with Assignee, Priority, and Status Filters

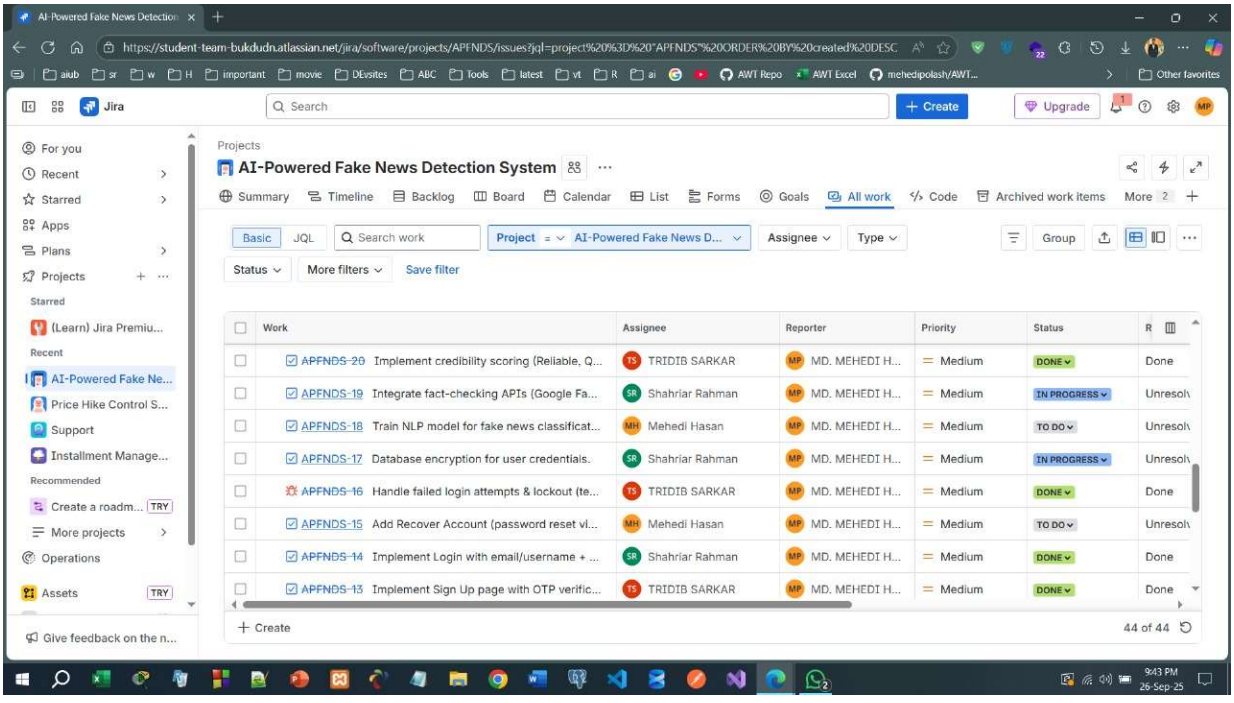


Figure-15: Jira All Work View Highlighting Completed and In-Progress Tasks with Assignees and Status Updates

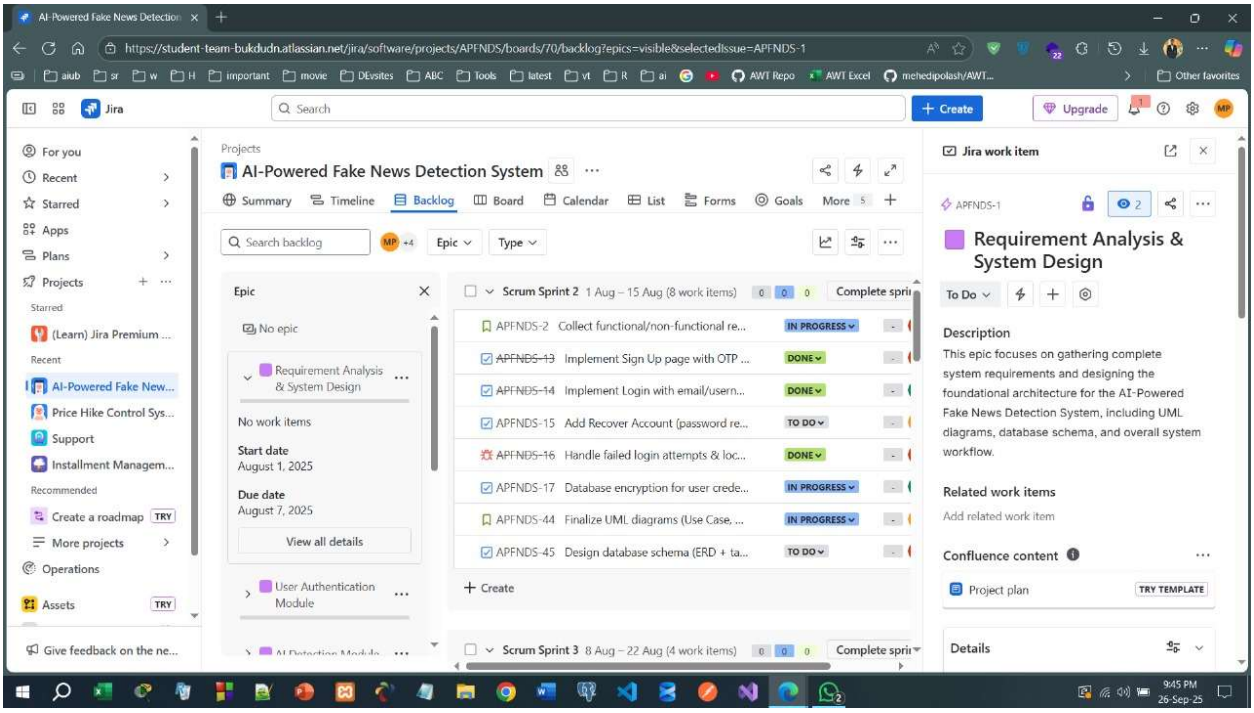


Figure-16: Jira Epic Detail View for "Requirement Analysis & System Design" with Description and Linked Work Items

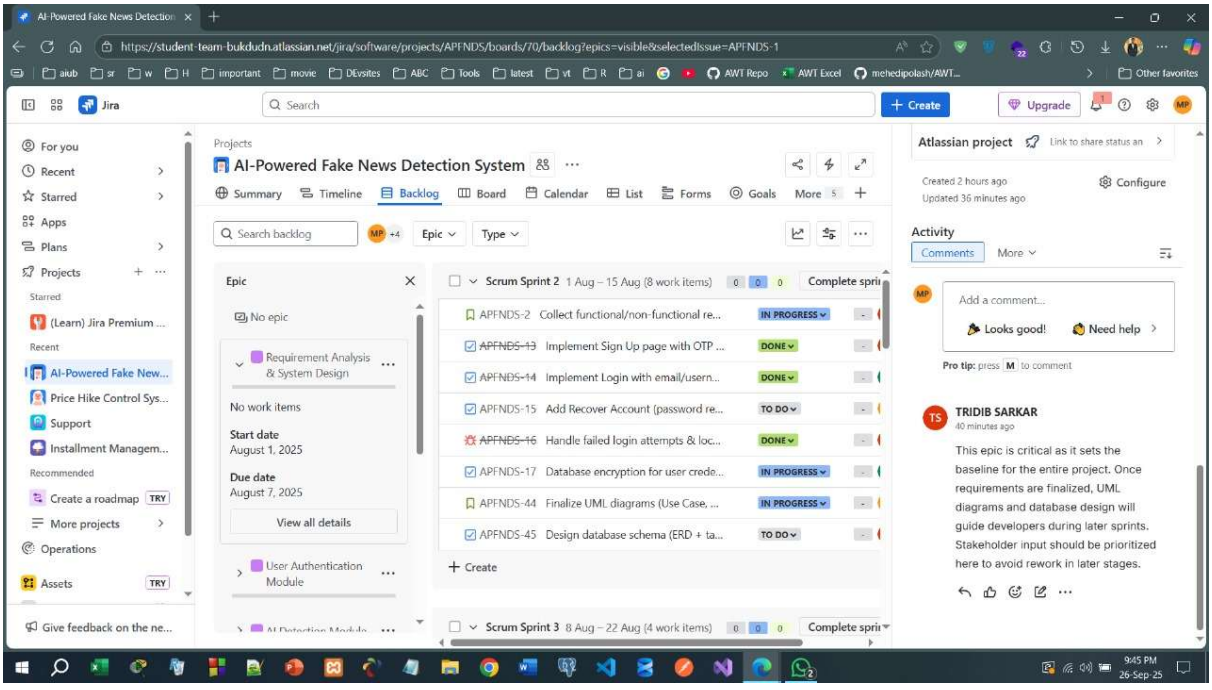


Figure-17: Jira Epic Panel with Detailed View of "Requirement Analysis & System Design" Showing Description and Sprint-Linked Tasks

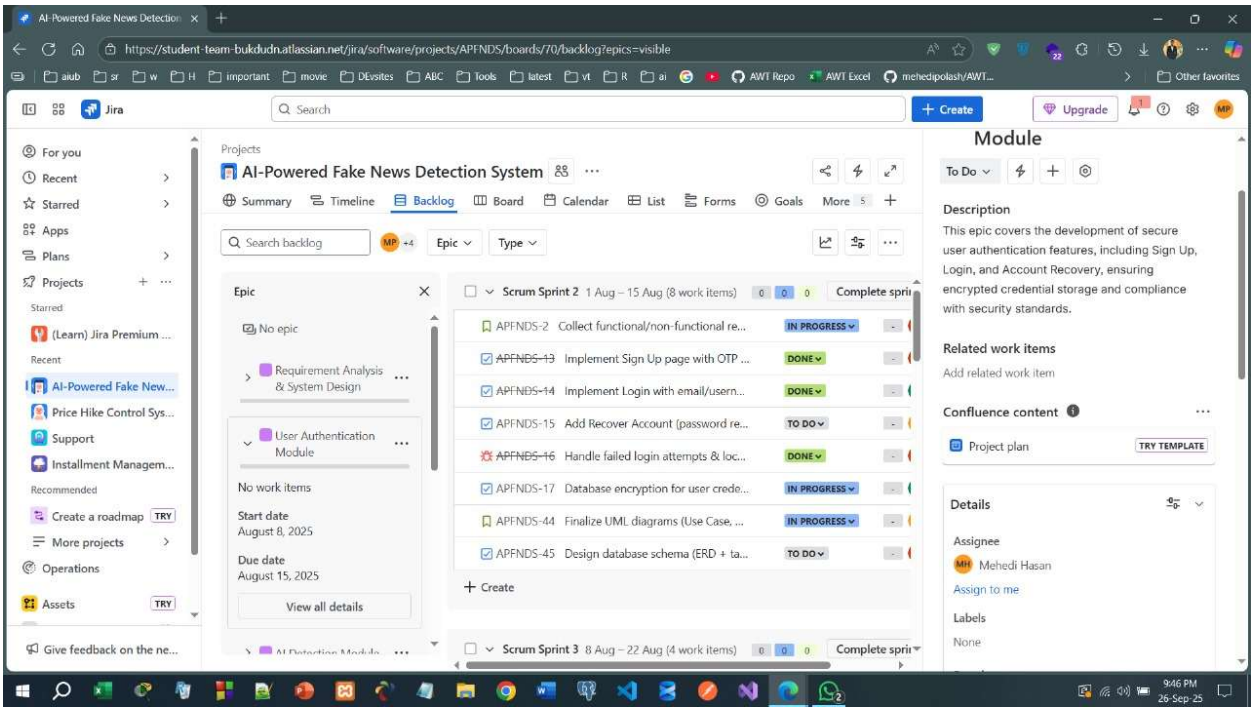


Figure-18: Jira Epic Detail View for "User Authentication Module" with Description and Security Features Overview

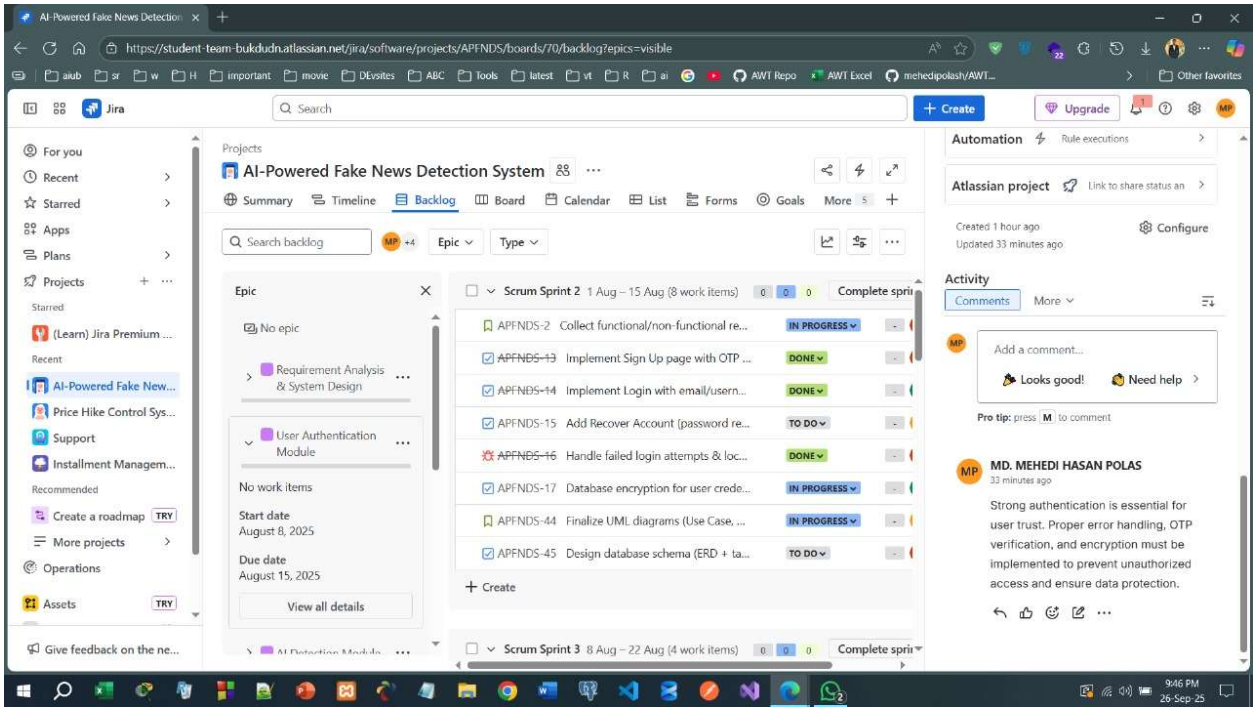


Figure-19: Jira Epic "User Authentication Module" with Activity Comments and Security Implementation Notes

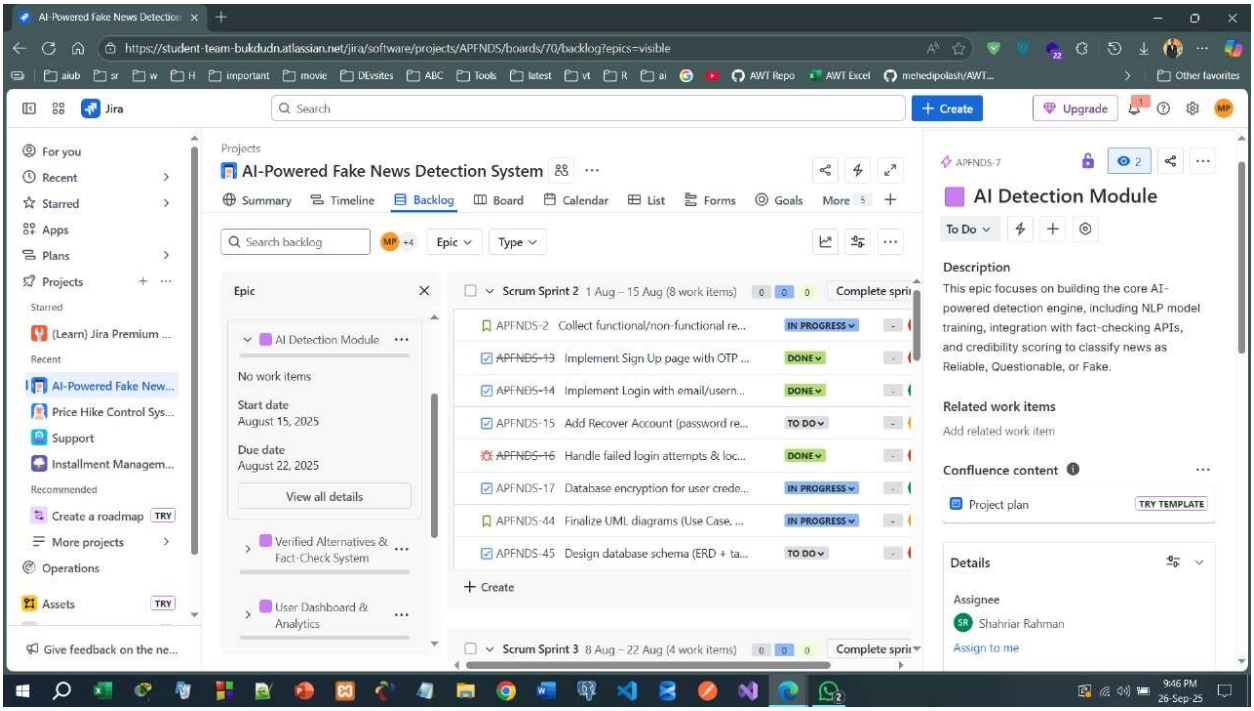


Figure-20: Jira Epic Detail View for "AI Detection Module" with Description of Core AI Features and Assigned Owner

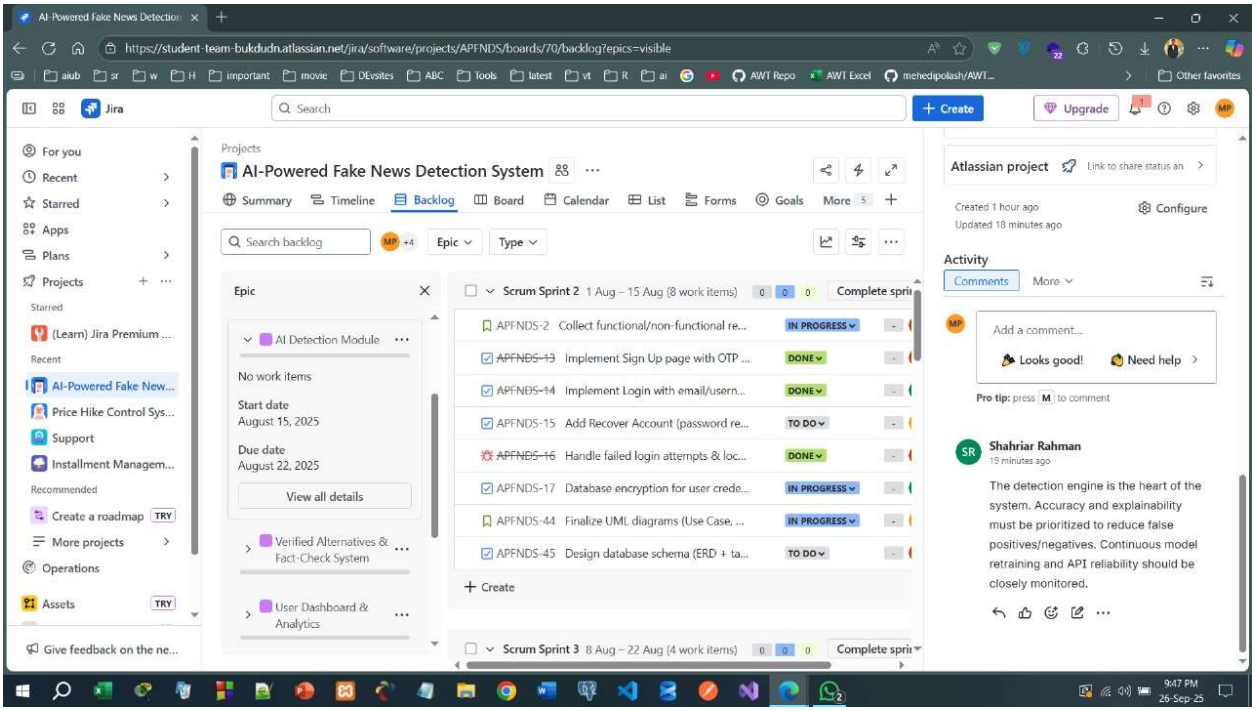


Figure-21: Jira Epic "AI Detection Module" with Team Comments on Accuracy, Explainability, and Model Retraining

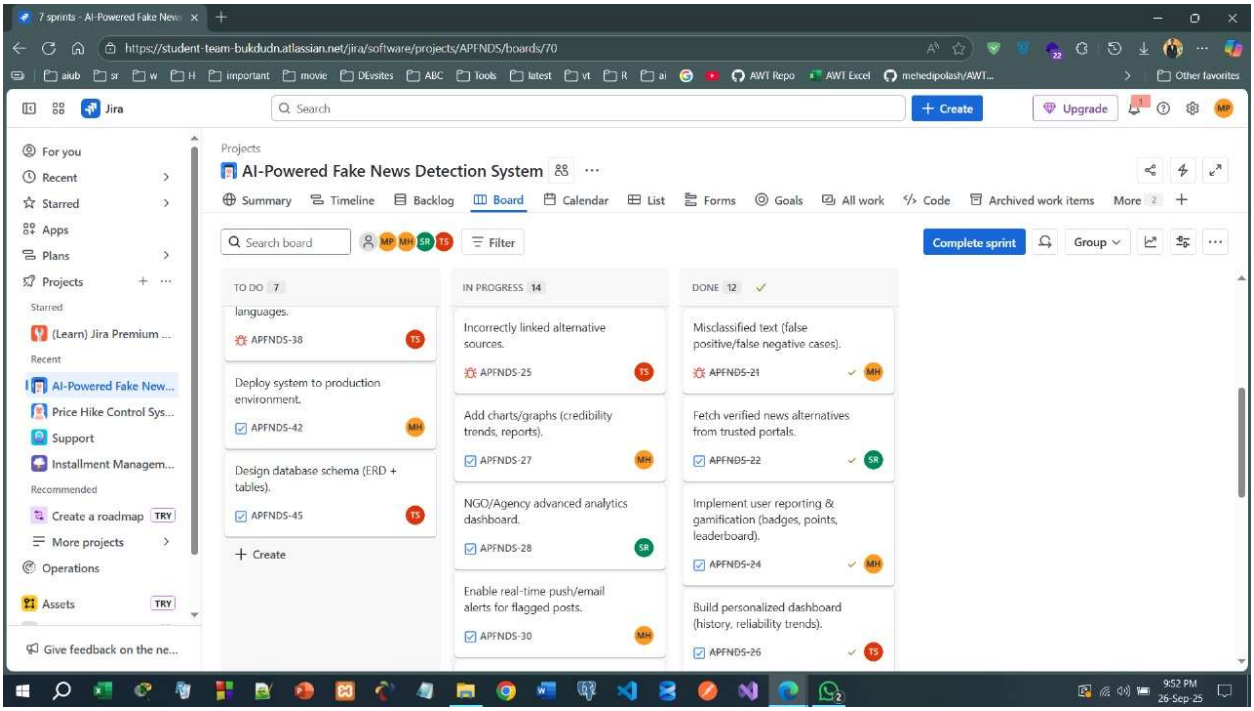


Figure-22: Jira Board View Displaying Sprint Tasks Distributed Across To Do, In Progress, and Done Columns

5. Marketing Plan

- **Objective**

The goal of this marketing plan is to **make the solution popular among the community** (users, NGOs, media, and government agencies) and establish it as a **trusted tool for combating misinformation**, while generating sustainable revenue.

- **Short-Term Marketing Plan (0–12 Months)**

a) Awareness & Early Adoption

- Beta Launch with NGOs and Universities: Partner with fact-checking NGOs and academic institutions to test the product and generate credibility.
- Influencer Collaboration: Work with journalists, educators, and social activists to demonstrate the product on social media.
- Gamified Community Growth: Reward early adopters with badges and leaderboard rankings.

b) User Acquisition

- Offer trail browser extension/mobile app to individuals for quick adoption.
- Run referral programs, users earn extra points for inviting friends.

- Launch educational content (blogs, infographics, short TikTok/YouTube videos) teaching people how to detect misinformation.

c) Partnerships

- Secure 2–3 NGO partnerships in Bangladesh or South Asia for credibility.
- Collaborate with local media houses to integrate verified alternatives into their content.

➢ **Long-Term Marketing Plan (1–3 Years)**

a) Market Expansion

- Regional Rollout: Expand from Bangladesh to other developing countries (India, Indonesia, Nigeria, Kenya) where misinformation is a critical issue.
- Language Expansion: Add more multi-language support for local adoption.
- Government Adoption: Partner with election commissions and health agencies to provide dashboards for real time misinformation tracking.

b) Brand Positioning

- Establish the startup as a global thought leader in misinformation detection.
- Publish annual reports on misinformation trends and distribute them to media outlets.

c) Monetization Growth

- Introduce specialized subscription plans for NGOs, media, and agencies.
- Build API integrations for social platforms and government portals.
- Expand into corporate partnerships (brands fighting reputational risks from fake news).

5.4 Continuous Marketing Plan (Ongoing Activities)

a) Community Engagement

- Maintain active social media presence with updates on new misinformation cases.
- Keep gamification features fresh (seasonal challenges, new badges, top contributor spotlights).
- Regularly update the Educational Resource Center with tutorials, real-world case studies, and quizzes.

b) Public Relations & Trust Building

- Consistently share success stories (e.g., how the system helped prevent misinformation during an election or health crisis).
- Publish monthly blogs/newsletters on trending misinformation topics.
- Engage with journalists and media outlets for earned coverage.

c) Feedback & Adaptation

- Collect user feedback through surveys and in-app prompts.
- Adapt marketing messages to match user concerns during global events (e.g., elections, pandemics, natural disasters).

5.5 Success Metrics (KPIs)

Short-Term:

- 10,000 users acquired in Year 1.
- 3 NGO/media partnerships secured.

Long-Term:

- Expand to 5+ countries.
- Secure 10+ institutional partnerships.

Continuous:

- Maintain >40% monthly active users.
- Earn 5+ major media features per year.

6. Cost and Profit Analysis

6.1 Estimated Development and Operational Cost

Personnel Costs (6 months development cycle):

- 4 Developers (BDT 45,000 × 6 × 4) = **1,080,000 BDT**
- 1 Project Manager (BDT 55,000 × 6) = **330,000 BDT**
- 1 UI/UX Designer (BDT 35,000 × 6) = **210,000 BDT**
- 1 AI/ML Engineer (BDT 60,000 × 6) = **360,000 BDT**
- 1 QA Engineer/Tester (BDT 30,000 × 6) = **180,000 BDT**

Infrastructure & Technology Costs:

- Cloud Hosting & Databases (AWS/Google Cloud) = **150,000 BDT**
- AI/ML Model Training (GPU compute, APIs, storage) = **200,000 BDT**
- Security & Privacy Tools (Encryption, Compliance) = **100,000 BDT**
- Integration with Fact-Checking APIs (subscription/partnerships) = **120,000 BDT**

Marketing & Outreach Costs:

- Initial Marketing Campaigns (social media, ads, PR) = **180,000 BDT**
- NGO & University Collaboration Programs = **100,000 BDT**
- Community Gamification (badges, points, rewards) = **60,000 BDT**

Miscellaneous:

- Office/Remote Tools (Slack, Jira, Figma, etc.) = **40,000 BDT**
- Legal, Compliance & Registration = **50,000 BDT**

Total Estimated Budget = 2,960,000 BDT (~29.6 Lakh BDT)

6.2 Profit Opportunities

1. **Licensing & Subscriptions**
    - NGOs, media houses, and government agencies can license the platform.
    - Premium subscription tiers (analytics dashboards, API integrations).

2. **Freemium Model**
    - Free version for individuals (basic detection).
    - Paid version with advanced features (multi-language, detailed analytics, ad-free experience).
3. **Corporate Partnerships**
    - Businesses and brands subscribe to monitor misinformation campaigns targeting them.
4. **Advertising (Non-intrusive)**
    - Safe, non-political ads in the free app version.
5. **Educational Services**
    - Paid workshops, webinars, and e-learning modules for institutions.

6.3 Profit Analysis

- **Revenue Projections (Year 1–3):**
    - Year 1: NGO/University Partnerships + Small-scale subscriptions = **1,200,000 BDT**
    - Year 2: Expansion to South Asia, Premium Plans, Ads = **4,000,000 BDT**
    - Year 3: International Expansion + Corporate Partnerships = **9,000,000 BDT**
- **Break-Even Point:**
    - With ~2,960,000 BDT initial investment, the system is expected to break even within **12–18 months**, assuming early adoption and partnerships.
- **Return on Investment (ROI):**
    - ROI expected to reach **150%–200%** within 3 years, depending on international rollout and subscription adoption.

6.4 Investor Attractiveness

- **High Social Impact** → Protects elections, public health, and democracy.
- **Scalable Technology** → Can be expanded globally with multi-language support.
- **Recurring Revenue Model** → Subscriptions, licensing, and partnerships ensure sustainability.
- **Market Demand** → Rising global concern over misinformation ensures long-term viability.

7. Reference

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- How Is AI Used In Debunking Misinformation - https://www.youtube.com/watch?v=mivvb5j2kwI