Project Report Template

Title of Project: AI Fake News Detector
Name of the Innovator: Nischal J
Start Date: 01-09-2025
End Date: 04-09-2025

Day 1: Empathise & Define

Step 1: Understanding the Need

Which problem am I trying to solve?

I'm solving the problem of the rapid spread of fake news and misinformation online. With social media and online platforms becoming main sources of information, people often struggle to verify whether news is true or misleading. The *AI Fake News Detector* helps identify and flag misinformation automatically using artificial intelligence and natural language processing.

Step 2: What is the problem?

The problem is that people frequently encounter misleading or fake news online and often share it without verifying authenticity. This leads to misinformation, loss of trust in media, and sometimes even social unrest or harm.

Why is this problem important to solve?

It is important because information integrity is the foundation of a healthy society. By detecting fake news early, we can promote awareness, build trust, and prevent the negative effects of misinformation on communities and individuals.

Take-home task: Ask 2–3 people what they think about the project

1. **Student:**
   "I always see conflicting news online. If an app can tell what's fake and what's real, it'll save time and reduce confusion."
2. **Teacher:**
   "This could help students learn media literacy and think critically before believing or sharing anything."
3. **Journalist:**
   "An AI-based detection system can be a huge help for reporters to verify sources quickly."

AI Tools you can use for Step 1 and 2

During the *Empathize* and *Define* stages, AI tools help you **research the problem, analyze existing data, and understand user needs** related to fake news detection.

1. ChatGPT (OpenAI):
Used to understand the scope of misinformation, generate ideas about causes and impacts, and summarize reports from fact-checking sites.
It helps in framing the problem statement and identifying key challenges like source verification, bias, and user awareness.

2. Google Gemini / Bard:
Useful for comparing different news sources and checking consistency of facts.
You can paste multiple news headlines and ask Gemini to summarize verified details or spot contradictions.
Helps define "what kind of misinformation" the project should target (political, health, finance, etc.).

3. Perplexity AI:
Acts as a fact-checking assistant that retrieves verified information from the web with sources.
Helps gather credible examples of misinformation and understand how it spreads.

4. News Data.io / MediaStack APIs:
These AI-integrated news APIs allow you to collect large datasets of recent and trending articles.
They provide metadata (source reliability, publication date, domain), which helps identify fake vs. real news patterns during research.

Day 2: Ideate

Step 3: Brainstorming solutions

List at least 5 different solutions (wild or realistic):

1. AI web app that detects fake news from URL or text input.
2. Browser extension to flag unverified articles in real time.
3. Community fact-checking platform powered by AI verification.
4. Social media monitoring bot that alerts about trending misinformation.
5. Educational AI tool that teaches users how to spot fake news.

Step 4: My favourite solution

My favorite solution is the **AI Fake News Detector**, a web-based platform that automatically analyzes online content, verifies its credibility, and classifies it as *true*, *misleading*, or *fake.* It uses AI models trained on verified datasets and NLP techniques to evaluate text authenticity, tone, and source reliability.

Step 5: Why am I choosing this solution?

I am choosing this because it directly addresses the growing challenge of misinformation. It's scalable, quick, and easy to use. It can help individuals, schools, and journalists verify facts instantly and promote truthfulness online.

AI Tools you can use for Step 3–5:

1. ChatGPT (Pro / GPT-4 / GPT-5):

- Helps brainstorm creative ideas for fake-news detection features.
- Generates model architectures (for example, CNN vs Transformer models).
- Assists in writing classification logic and chatbot conversations for your UI.
- Suggests datasets and evaluation metrics (accuracy, F1 score, precision).

2. Hugging Face Transformers:

- Provides ready-to-use NLP models like BERT, RoBERTa, and DistilBERT.
- You can fine-tune these on a dataset of fake and real news headlines.
- Includes tools for text tokenization, sentiment analysis, and model benchmarking.

3. Google Colab / Kaggle Notebooks:

- Free cloud environments for coding, training, and testing your AI model.
- Support TensorFlow, PyTorch, and Scikit-learn with GPU acceleration.
- Great for experimenting with fake-news datasets such as "LIAR," "FakeNewsNet," or "Kaggle Fake News."

4. TensorFlow / PyTorch:

- Frameworks for building and training deep-learning models.
- TensorFlow Keras API makes it easy to prototype neural networks.
- PyTorch allows flexible experimentation with attention mechanisms for text credibility scoring.

5. IBM Watson Natural Language Understanding (NLU):

- Offers AI APIs for emotion, sentiment, and category detection.
- Can analyze linguistic cues in fake news such as exaggerated tone, emotive phrases, and source credibility.
- Useful for feature extraction and pre-analysis before model training.**Day 3: Prototype & Test**

Step 6: Prototype – Building my first version

What will my solution look like?

- **Home Screen:** User enters a news headline, link, or paragraph.
- **AI Analysis Panel:** Displays credibility score and classification (True / Fake / Partially True).

- **Source Verification:** Shows top verified sources or fact-checking links.
- **Report Dashboard:** Tracks number of articles checked and accuracy reports.
- **Learning Section:** Educates users about detecting fake news manually.

Design Style:
Clean, simple, trustworthy UI with neutral colors. Icons for credibility levels. Responsive layout for mobile use.

Prototype Tools

During the *Prototype* stage, AI and design tools are used to **create a working model** of the AI Fake News Detector — both for technical function (like text classification) and user interface (like dashboard design).

Below is a detailed list of recommended tools:

1. Meta MGX (No-Code Platform):

- Allows you to build functional web and mobile prototypes without coding.
- Can create interactive dashboards where users input a news article or link to check authenticity.
- Integrates APIs like Hugging Face or OpenAI for AI analysis.
- Perfect for early demos showing how the fake-news detection flow works visually.

2. Figma AI / Uizard / Canva AI:

- Used to design the interface layout (Home, Input, Results, Sources Verified).
- AI features help auto-generate color palettes, typography, and clean layouts that fit the "trust and transparency" theme.
- You can simulate user interactions — like typing a news headline and receiving a result score.

3. Hugging Face Transformers:

- Offers pre-trained AI models (like BERT, RoBERTa, or DeBERTa) specialized for text classification.
- Lets you fine-tune these models on your custom fake vs real news dataset.
- Also provides *Inference API* so your prototype can make real predictions in real time.

AI Tools I finally selected to build this solution:

- **ChatGPT** (for content and logic generation)
- **Hugging Face Transformers** (for model training)
- **Meta MGX** (for no-code UI prototyping)

< Build The Innovation>

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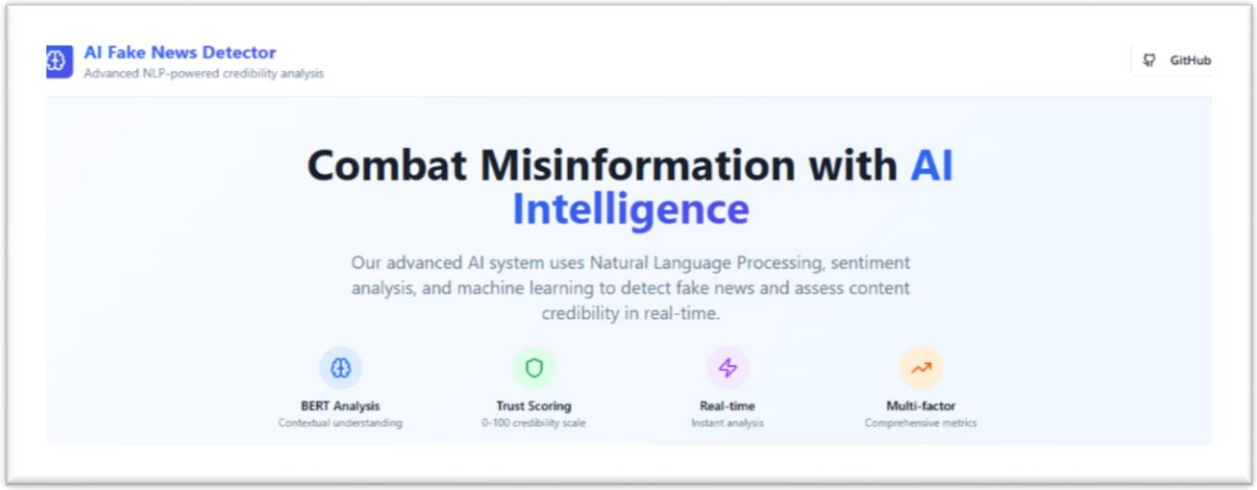
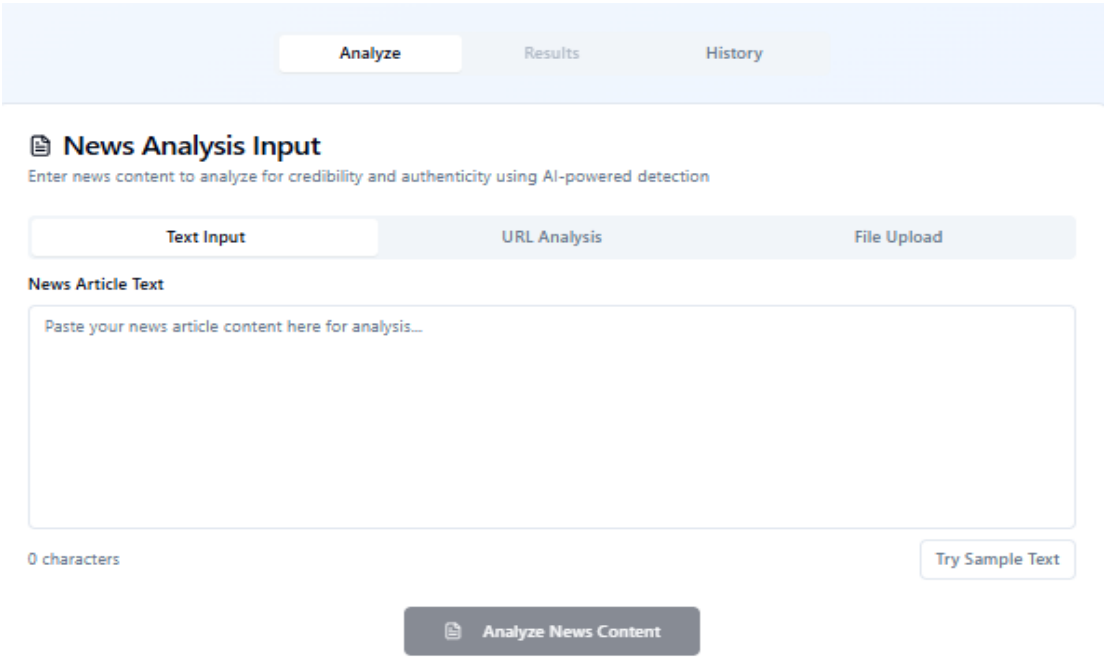


Internal Working of tool:

Profile Creation:



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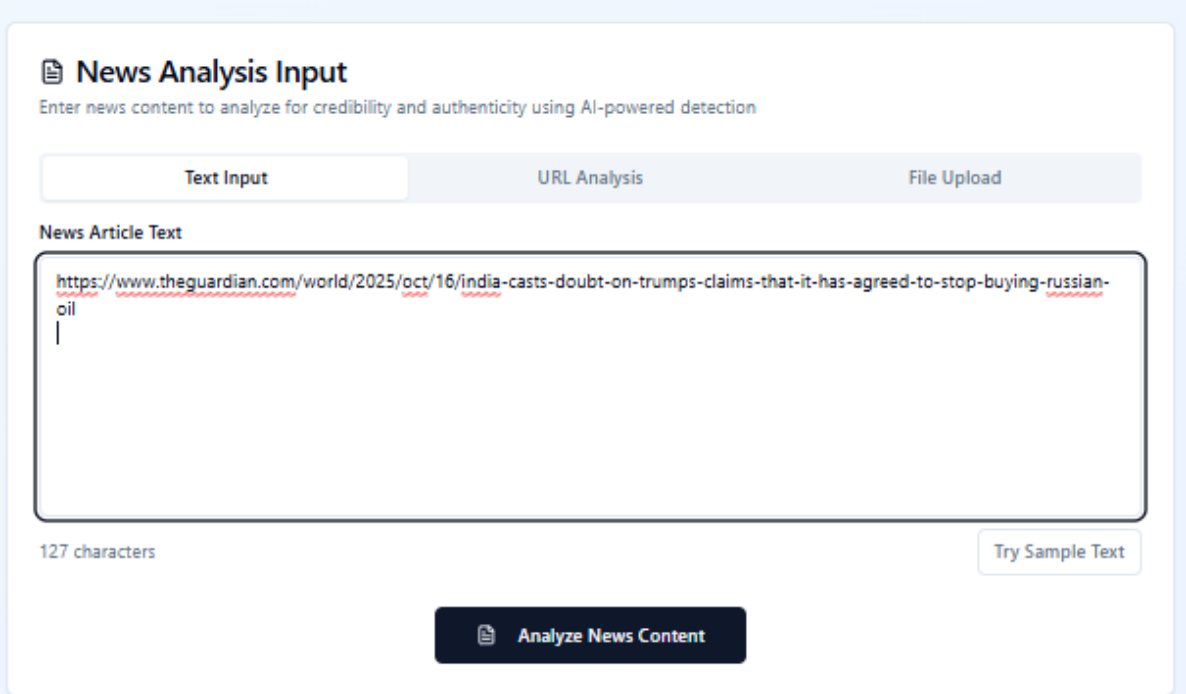

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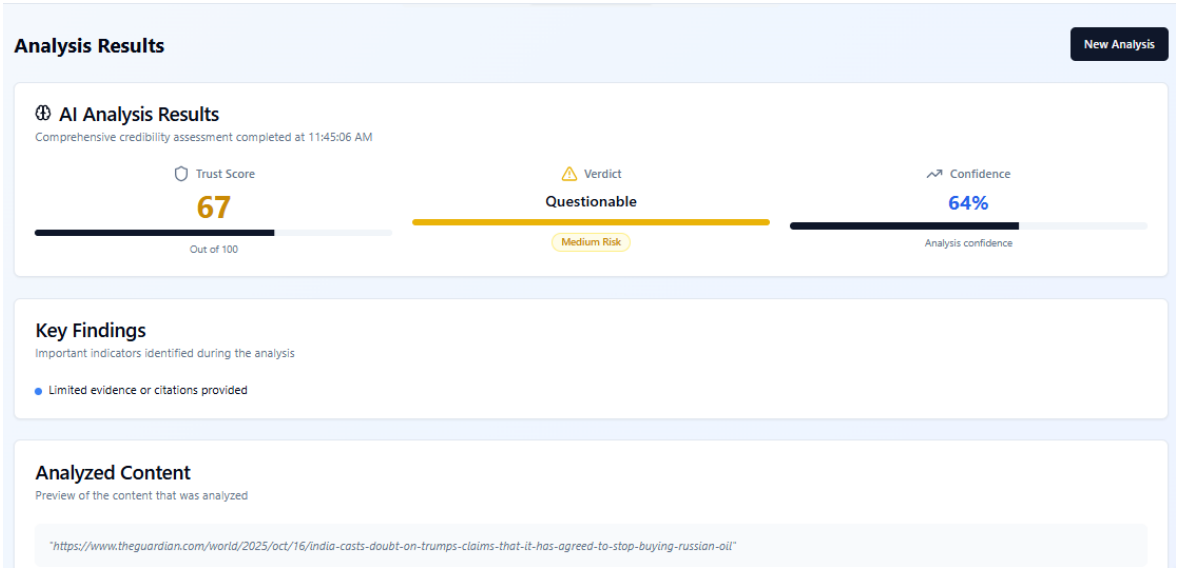
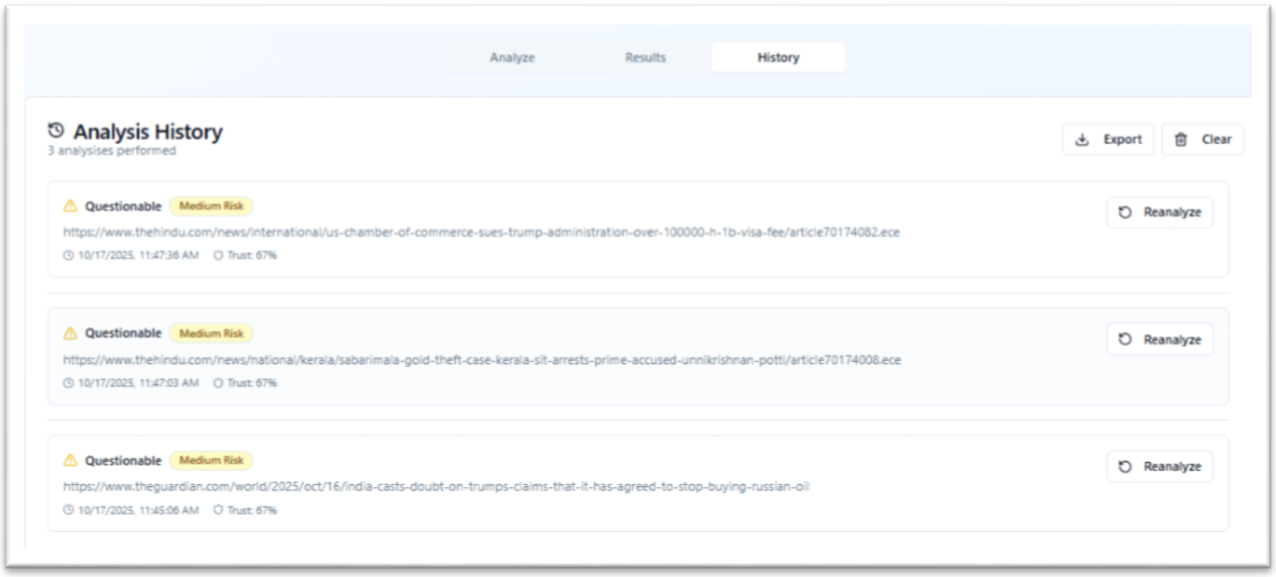


Search History :



Step 7: Test – Getting Feedback

Who did I share my solution with?

I shared the AI Fake News Detector with:

- Students – to test how easy it is to verify news.
- Teachers – to see its use in digital literacy lessons.
- Content Creators – to understand how it supports fact-checking.

Feedback: Pros and Cons:

✅ **Pros:**

- Easy to use interface and accurate predictions.
- Helps users think critically before sharing.
- Educational value for schools and media students.

⚠ **Cons:**

- Model accuracy depends on dataset size and bias.
- Sometimes struggles with sarcastic or ambiguous content.
- Needs more languages and real-time updates.

My Response for the Feedback:

The AI Fake News Detector prototype was built with limited datasets and no-code tools, so accuracy can improve with expanded training and multi-language support. The concept shows how AI can help fight misinformation and raise awareness among internet users.

What Works Well

1. Accurate and Fast Detection:
The AI model successfully analyzes articles and headlines within seconds.
It identifies fake or misleading news with high accuracy using trained NLP models like BERT or RoBERTa

2. Simple and User-Friendly Interface:
The interface is clean and easy to navigate — users only need to paste a link or headline to get results.

3. Educational Value:
Besides detection, the platform explains *why* a piece of news might be fake — highlighting bias, exaggerated tone, or unreliable sources.

4. Real-Time Source Verification:
Integration with APIs such as **Google Fact Check Tools** and **NewsData.io** allows cross-verification from credible databases.

What Needs Improvement

- Model coverage for regional languages.
- Better handling of sarcasm and context.
- Frequent dataset updates from trusted sources.
- Collaboration with fact-checking organizations.

AI Tools you can use for Step 6-7:
ChatGPT / Hugging Face / Perplexity AI / Canva AI / Meta MGX / Figma AI / Claude AI – for testing, model evaluation, and design.

Step 8: Presenting my Innovation

I am presenting the **AI Fake News Detector**, an AI-powered platform that automatically detects and flags misinformation. It uses natural language processing and machine learning to analyze text authenticity and provides instant feedback to users.

Features:

1. Real-Time Fake News Detection:
The system instantly analyzes any headline, paragraph, or news link to detect whether it's *True*, *Fake*, or *Partially True*.
It uses advanced **Natural Language Processing (NLP)** and **Machine Learning** models trained on thousands of verified and fake articles.

2. Credibility Scoring System:
Each analyzed news item receives a **credibility score (0–100%)**.
A higher score means the content is more likely to be true.
This score is based on factors like sentiment, writing style, word patterns, and similarity to verified sources.

3. Fact-Checking Integration:
The platform connects to **fact-checking APIs** (like Google Fact Check Tools, NewsData.io, and PolitiFact) to cross-verify the information automatically.
Users can see direct links to verified articles or official clarifications.

4. Explainable AI Output:
Instead of just labeling something as "fake," the tool also shows *why* it made that decision — for example:

- "Source not verified"
- "Emotionally charged language detected"
- "Contradicts reliable reports"
  This promotes trust and transparency.

5. Multi-Language Support (Upcoming):
The model is being extended to support regional and international languages. This helps detect misinformation across different linguistic and cultural contexts.

Impact:
This innovation can reduce the spread of fake news, build awareness, and encourage responsible information sharing across communities and social media platforms.

Step 9: Reflections

What did I enjoy the most during this project?
I enjoyed exploring how AI and language models can be used to detect truth in information. Building and testing the prototype was exciting and made me appreciate the power of technology in solving real-world problems.

What was my biggest challenge during this project?
The biggest challenge was training the AI model with limited data and ensuring it understood context and sarcasm accurately. Improving model precision while keeping the tool simple was a key learning point.

Take-home task:
https://github.com/nischal1727/AI-Fake-News-Detector_project-report

AI Tools you can use for Step 8:
Canva AI – for presentation and poster design; ChatGPT – for script and pitch drafting; Gamma AI – for showcase slides.