Project Summary: Fake News Detector

1. Problem Statement

The rapid spread of online misinformation poses a significant threat to informed public discourse and societal trust. Users across all platforms, including social media, are inundated with content that is difficult to manually verify, creating an urgent need for an automated, real-time tool to help discern credible information.

2. Proposed Solution

We have developed an innovative Chrome Extension that acts as an intelligent, real-time fake news detector. This extension seamlessly integrates into any webpage, leveraging an advanced agentic AI pipeline to analyze content, verify sources, and present clear credibility assessments directly within the user's browsing experience. Our goal is to empower users with immediate, context-aware insights into the trustworthiness of the information they consume.

3. Approach

Our solution employs a sophisticated multi-stage agentic AI pipeline, orchestrated within a Manifest V3 Chrome Extension architecture. This design ensures efficiency, accuracy, and responsive user interaction. The pipeline is structured for clarity, editability, and strict adherence to defined confidence levels.

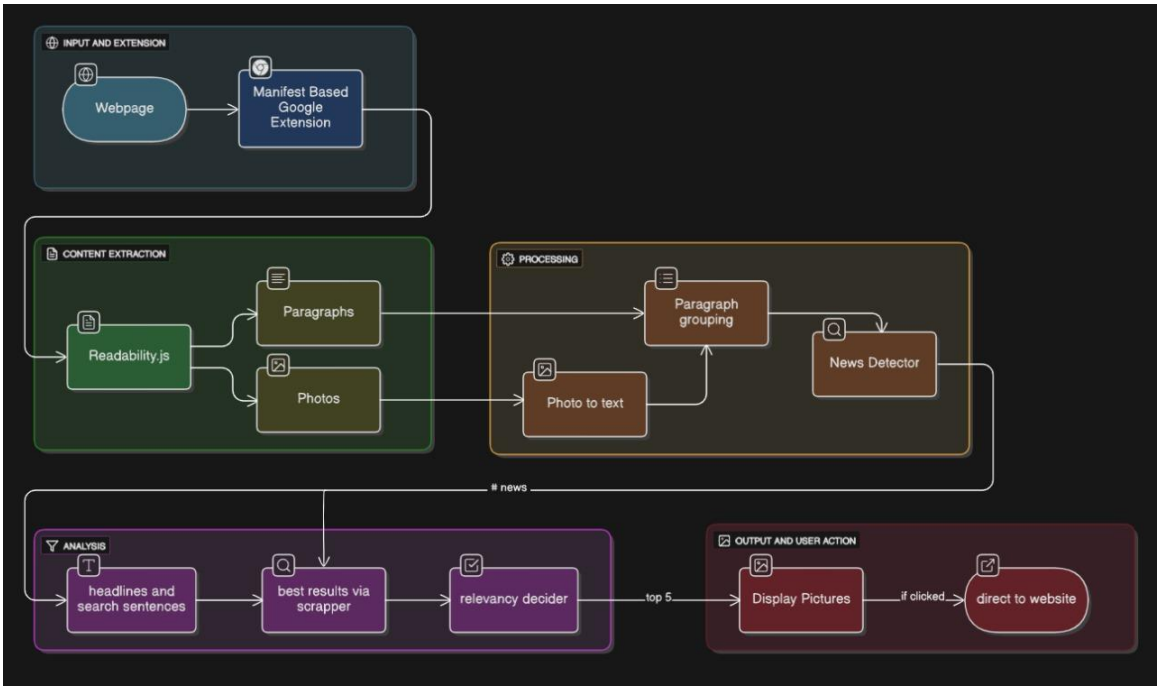

Fig. Fake News Detector Pipeline

Pipeline Workflow Summary:

1. **Content Extraction:** The extension's content script actively scans the webpage for text and image-based content, using `Readability.js` and custom heuristics to identify potential news items. As content is identified, a **gray dot** is injected to indicate analysis is in progress.

2. **AI Processing & Analysis:** The extracted content is sent to the background service worker. Here, it undergoes a three-step analysis using Google's Gemini API:

   - **News Identification:** A strict prompt classifies the content as `NEWS` or `NOT_NEWS`.
   - **Search Query Generation:** For news items, relevant search queries are generated to find corroborating sources.
   - **Credibility Assessment:** The Google Custom Search API is used to gather search results. Gemini then evaluates these sources against the original item, checking for contradictions and assessing source credibility.
   - **Relativity Decider:** The LLM compares the news content with verified sources to assess factual consistency and assigns a credibility level (green, orange, or red).

3. **Output & User Interaction:** The final analysis returns a confidence level, which updates the dot's color:

   - **Green:** Verified and credible — information is strongly supported by trusted and reputable sources.
   - **Orange:** Suspicious or partially supported — evidence is limited or mixed across available sources.
   - **Red:** Unverified or unreliable — no credible support found or significant contradictions detected.

4. Outcome & Impact

The Fake News Detector Chrome Extension provides a powerful, user-centric tool to combat misinformation in real-time. Its non-intrusive design, featuring clear color-coded signals and transparent sourcing, empowers users to quickly assess content credibility. This fosters a more informed and discerning online community by making fact-checking accessible and immediate. The modular architecture, built on an agentic AI pipeline, ensures the solution is not only scalable to handle increasing volumes of online content but also adaptable to evolving misinformation tactics. This robust and user-friendly tool directly addresses a critical challenge in the modern digital landscape, enhancing media literacy and promoting a healthier information ecosystem. Future enhancements could include personalized credibility profiles, integration with more diverse fact-checking databases, and advanced image analysis capabilities.