SMART INDIA HACKATHON 2025

- Problem Statement ID – SIH25034
- Problem Statement Title- AI powered Internship Recommendation for PM Internship Scheme
- Theme- Smart Education
- PS Category- Software
- Team ID-
- Team Name - Code Redz

AI-Powered Internship Recommendations for PM Internship Scheme

❖ Proposed Solution (Describe your Idea/Solution/Prototype)

Proposed Solution

A lightweight AI-powered recommendation engine integrated with the PM Internship Scheme portal to suggest 3–5 most relevant internships for each candidate.

Detailed Explanation

- The system captures candidate profile inputs like education, skills, interests, and location.
- It applies simple AI or rule-based logic to filter for the most suitable internships.
- Recommendations are displayed in an easy, mobile-friendly format with regional language support.

Relevance to Problem

- Addresses the difficulty faced by first-generation
- learners and digitally less-exposed candidates by simplifying the discovery of matching opportunities.

Innovation & Uniqueness

- Focus on "Lightweight" and "Simple" AI
- User-Centric Curation
- Application in Public Service
- Potential for Scalable Impact

TECHNICAL APPROACH

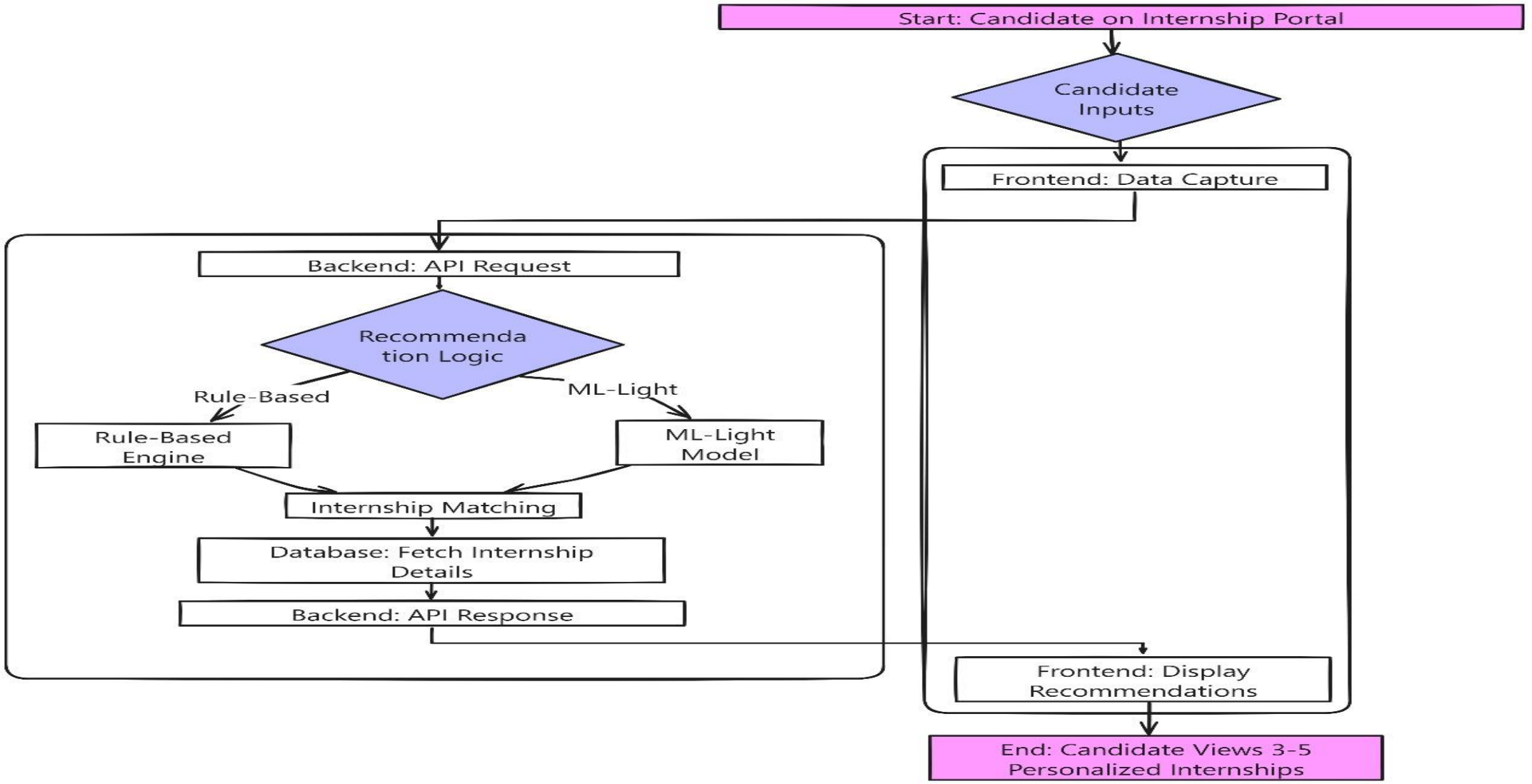
TECHNOLOGIES USED:-

- **Frontend**: React, Tailwind
- **Backend**: Flask (lightweight).
- **AI/Logic**: Rule-based filtering(TF-IDF) + light ML model (scikit-learn).
- **Database**: MySQL/PostgreSQL for internship & user data

METHODOLY:-

- Candidate inputs profile details.
- Engine matches against internship database.
- Filters by skills, education, location, interests.
- Ranks & outputs top 3–5 results.

Workflow Diagram



FEASIBILITY AND VIABILITY

Feasibility of the Idea

- **Tech Stack:** Python (Flask/FastAPI) for a lightweight back-end, React Native for a mobile-first UI, and Scikit-learn for the recommendation model.
- **ML-Light Approach:** Utilizes a rule-based engine or simple content-based filtering, avoiding complex, resource-heavy AI to ensure it runs on basic infrastructure and low-end devices.
- **Simple Integration:** A REST API is used to seamlessly plug the recommendation engine into the existing PM Internship Scheme portal with minimal disruption.
- **Low Data Dependency:** The system works from day one using direct candidate inputs (skills, location, interests), avoiding the need for large historical datasets to make effective recommendations (overcoming the "cold-start" problem).

Potential Challenges and Risks

- **Data Quality:** Internship descriptions may be inconsistent, poorly written, or lack clear skill keywords.
- **Language Barrier:** Effectively translating technical terms and user inputs across multiple regional languages.
- **User Adoption:** Ensuring the target audience finds the tool genuinely simple and trusts its recommendations.

Strategies for Overcoming These Challenges

Data Quality: Implement a data pre-processing pipeline to standardize and clean internship descriptions before they are fed into the model. Use keyword extraction to tag internships automatically.
User Adoption: A relentless focus on a simple, intuitive UI/UX.

IMPACT AND BENEFITS

Impacts

- **Boost Confidence**: Empowers first-time applicants by simplifying choices and providing a clear, manageable starting point.
- **Skill-Based Recommendations**: Directly matches candidate skills to internship requirements, ensuring suggestions are relevant and practical.
- **Reduces Mismatched Applications**: Increases the quality of applications by aligning them with suitable roles, saving time for both candidates and recruiters.
- **Improve Outcomes:** Leads to higher success rates in securing internships, enhancing youth employability and career prospects.

Benefits

- **Social:** Better access to opportunities, inclusive growth.
- **Economic:** Higher placement & employability, skill-to-job alignment.
- **Environmental:** Digital-first, paperless process, reduced travel for wrong-fit internships.

RESEARCH AND REFERENCES

Research

- A recent report by the Institute for Competitiveness highlighted that a mere 8.25% of graduates are employed in roles that align with their qualifications.
- Over 50% of graduates are underemployed in "elementary" or "semi-skilled" jobs that do not require their level of education
- PM Internship Scheme: High Hopes Tempered by Low Participation:https://docs.google.com/document/d/1wQz3upDC0K5YKww2sQJvEBa3Vl2-afg7FgiG7iNM2kU/edit?usp=sharing

- **References**:
- Aggarwal, C. C. (2016). Recommender Systems: The Textbook. Springer. (Specifically chapters on content-based filtering).
- Library: Scikit-learn Documentation on TfidfVectorizer and cosine_similarity: https://scikit-learn.org/stable/modules/feature_extraction.html#text-feature-extraction
- *Framework Documentation:* **Flask** (https://flask.palletsprojects.com/) and **FastAPI** (https://fastapi.tiangolo.com/) are well-documented and ideal for building lightweight APIs.
- GeminiResearchdocument https://docs.google.com/document/d/1nqb0rQA2O8RL6T5i8v9sshCMaRInbL_sNIRS0tIu2Og/edit?tab=t.0