



SCTR'S PUNE INSTITUTE OF COMPUTER TECHNOLOGY

# TECHFIESTA'26

INTERNATIONAL HACKATHON  
CODE. CREATE. CONQUER



## RESTful Coders

- **Problem Statement ID:** ED004
- **Problem Statement Title:** Automated Internship/Project Portal for Colleges
- **PS Domain:** Education
- **Team ID:** 697
- **Team Name:** RESTful Coders



# IDEA TITLE



## Proposed Solution

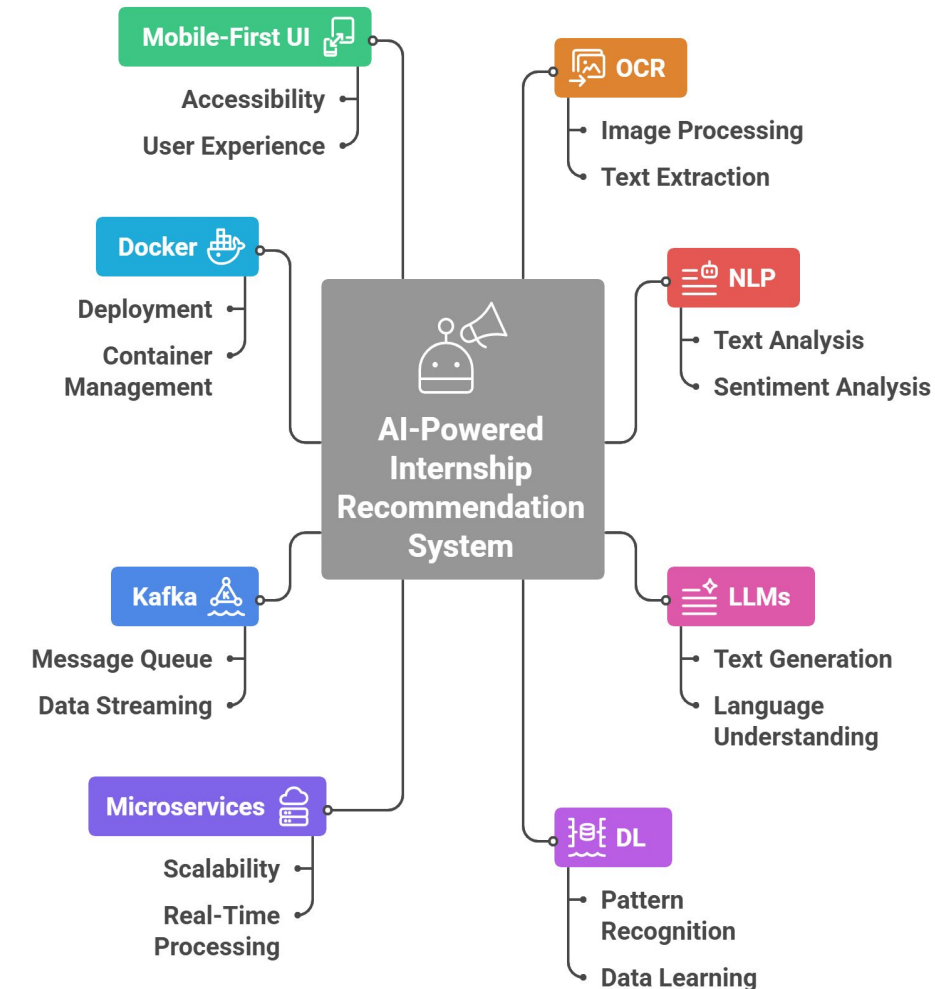
- AI-driven Internship Recommendation Engine** → Uses **LLM reasoning + NLP + Embedding similarity** for accurate, **context-aware** matches.
- Automated Profile Enrichment** → **OCR + NLP** extract skills, certifications & projects from resumes.
- RAG-based Conversational Assistant** → **RAG**-based bot answers internship queries & gives application guidance.
- Problem Fit & Positioning** → Bridges the skill–opportunity gap with **bias-free, explainable AI**.
- Innovation & Edge** → Hybrid AI (LLM + vector similarity search) + **Kafka** ensures real-time, scalable recommendations.
- Inclusivity by Design** → **Mobile-first**, lightweight UI built for rural & first-gen learners, **multilingual**.

## Problem Addressing, USPs

- ✓ Provides **personalized, explainable recommendations** (beyond keyword search)
- ✓ **Auto-enriches profiles** by uncovering hidden skills & achievements
- ✓ Offers **interactive guidance** for applications and skill gaps
- ✓ Delivers an **end-to-end ecosystem** trusted by both students & recruiters
- ✓ Designed to be **unique, inclusive, and scalable**

Prototype link : [Click Here!](#)

## AI-Powered Internship Recommendation System Architecture

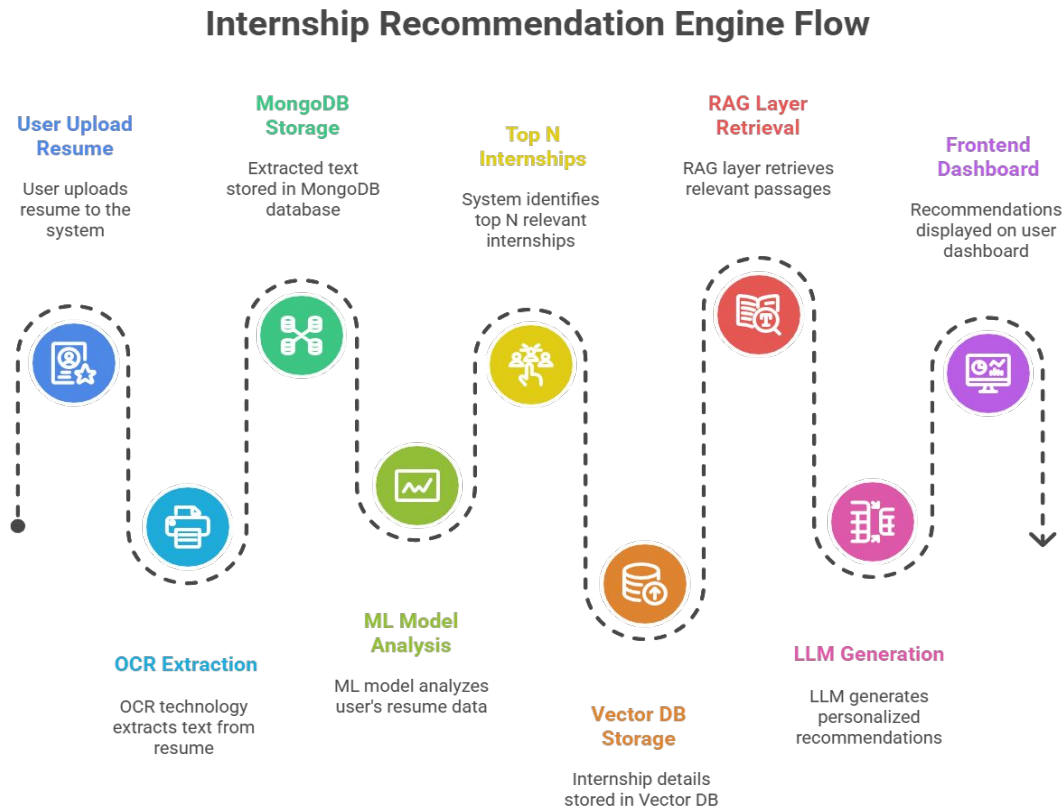




# TECHNICAL APPROACH



## Architecture (Flow) Diagram



## Tech Stack

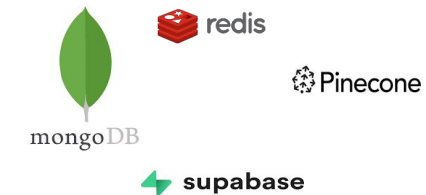
### Web Interface



### AIML



### Databases



### DevOps



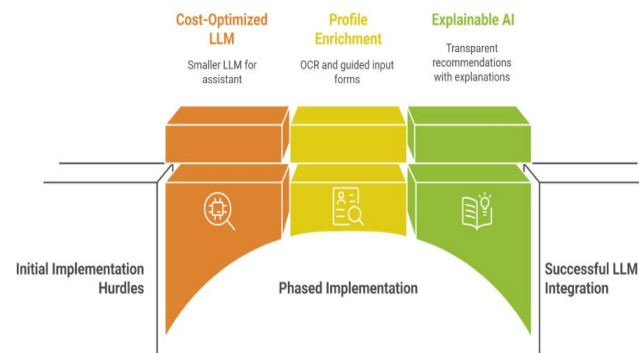
Prototype link : [Click Here!](#)

Prototype Document: [Click Here!](#)

# FEASIBILITY AND VIABILITY

## Feasibility Analysis

- Starts with efficient TF-IDF and embedding-based skill matching for reliable results
- Designed to integrate smoothly with existing college platforms and workflows
- Built around a college-first, role-based workflow for students, faculty, and admins
- Modular, API-driven architecture enables easy deployment and integration
- Mobile-first, multilingual UI supports diverse and first-generation learners
- Pay-as-you-go cloud deployment avoids heavy upfront infrastructure investment
- Scales based on student intake, academic cycles, and institutional needs
- Affordable and sustainable for both large universities and smaller colleges



## Challenges & Mitigation Strategies

**Challenge:** LLM complexity and potential high costs.

**Strategy:** A **phased implementation**. We will launch the core recommendation engine first and introduce a **cost-optimized, smaller LLM** for the conversational assistant later.

**Challenge:** Incomplete user profiles

**Strategy:** Our **automated profile enrichment** (**OCR** on resumes) and simple, guided input forms will ensure rich data from all users.

**Challenge:** Building user trust in AI.

**Strategy:** We will use **Explainable AI (XAI)**. Each recommendation will clearly state *why* it was suggested (e.g., "Matches your skills and location"), making the process transparent and trustworthy.



# IMPACT AND BENEFITS



## Fair & Transparent

Rule-based **safeguards** to ensure **unbiased, transparent** suggestions which are **explainable through ChatBot**.



## Future-Ready

Creates a foundation that can **easily adopt** advanced AI/ML features later **without re-design**.



## Low-Tech, High-Impact

Lightweight design ensures **fast loading** and smooth integration **without straining resources**.



## Quick Decision-Making

**3–5 best-fit internships** shown in simple cards/lists **reduce confusion** and **save time**.



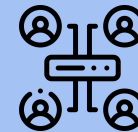
## Zero Learning Curve

Intuitive, **simple** UI with **visual cues**. **Easy input** and **clear results**.



## Reduced Admin Effort

**Automated shortlisting** lessens manual filtering work on the backend.



## Accessibility & Reach

**Mobile friendly, multilingual**, and low-resource design. **Suitable** for users with **low digital literacy**.



## Data-Driven Insights

Offers Data-driven **planning for policymakers** in the form of **Dashboard**.





# RESEARCH AND REFERENCES

*"Deep Learning for Recommender Systems: A Netflix Case Study"- ACM Computing Surveys(2021) - Foundation for **collaborative filtering** and deep matrix factorization crucial to model performance. [Click](#)*

*Low-Resource Language Processing: An OCR-Driven Summarization and Translation Pipeline(2025) - The methodology underpinning the **OCR & translation component** for handling diverse, non-English data inputs. [Click](#)*

*Attention-Based Neural Networks with TF-IDF Features and BERT Embeddings for Enhanced Course Recommendation System(2024) - Incorporating **contextual embeddings** for course similarity and boosting system relevance beyond traditional features. [Click](#)*

*Kafka Streams In Action: Event-driven Applications and Microservices(2024) - The architectural backbone for building a scalable, **real-time event-driven system** and reliable data processing pipeline. [Click](#)*

*RetrievalAttention: Accelerating Long-Context LLM Inference via Vector Retrieval(2024) - Key for efficient **knowledge-grounding** and **context handling**, allowing the agent to manage long conversational histories. [Click](#)*

*Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI(2020) - Guiding principles for designing our system to be **transparent** and providing justification for the recommendations/responses given. [Click](#)*