



CODESLAYER2k25

Code Collab Conquer



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India



AI For Goods

Project Title : KaamSetu – Rural Labor Exchange & Mediation App

Team Name : AI for Goods

Team Members:

Project Lead & UI/UX Designer – Ashna Smriti

- Conceptualised *KaamSetu* and designed an intuitive, rural-friendly interface.
- Focused on user journey mapping and visual consistency across the app.

Web App Developer – Sujeet Tiwari

- Developed the core Flutter application with SMS/USSD offline integration.
- Built user authentication and job-posting modules with smooth navigation.

Backend & ML Engineer – Aryan Raj

- Set up Firebase backend, database, and security layers.
- Created the AI-based labor-job matching algorithm and analytics dashboard.

AI Voice Assistant Integration –Ayush Singh

- Developed and integrated the AI Voice Assistant to enable natural, multilingual interaction with rural users.
- Implemented voice-based job posting and search features to make the app accessible for low-literacy users.

Tracks Chosen: AI/ML



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PROBLEM STATEMENT & TARGET AUDIENCE

Problem we're solving:

- Over 80% of India's rural workforce depends on informal word-of-mouth networks to find daily wage jobs.
- The rural unemployment rate is about 7.4% (CMIE, 2024). This is mainly due to a lack of digital access and no organised labor platforms.
- There is a mismatch between demand and skills, making it hard for employers to find reliable local workers.
- Frequent payment disputes and no worker verification system result in exploitation.
- Current job portals mainly focus on urban, skilled positions. This leaves rural workers unseen in the digital economy.

Target Users:

- Primary Users (B2C)
- Rural & semi-urban workers: Daily wage laborers, farmers, masons, carpenters, artisans, construction workers.
- Age group: 18–50 years
- Digital profile: Low internet literacy, mostly smartphone or feature phone users (hence SMS mode).
- Secondary Users (B2B / Governance)
- Local employers: Small contractors, farm owners, MSMEs, rural entrepreneurs.
- Panchayats & NGOs: For worker verification and dispute mediation.



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OUR UNIQUE SOLUTION

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Key Features:

- **AI Skill-Match Engine:** This feature recommends nearby jobs based on skills, wage expectations, and past work.
- **Offline + SMS Access:** It works even in areas with low connectivity.
- **Verified Worker Profiles:** Panchayat-verified digital reputation cards help build trust.
- **Community Mediation:** This service resolves disputes between workers and employers locally.
- **Multi-Language Support:** It automatically translates job posts and profiles into local languages.

Why It's Different:

Existing Platforms	KaamSetu Advantage
Focus on urban, skilled jobs	Built for “rural & unorganized” workers
Requires high internet access	Works via SMS / offline sync
No trust mechanism	Verified by Panchayat & community mediation
Static job listings	AI-driven smart matching & skill prediction

Novelty Factor:

- **AI + Trust Integration:** Combines artificial intelligence with community verification, which is the first of its kind in rural India.
- **Offline-first inclusion:** Ensures digital empowerment even without the internet.



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TECH STACK + ARCHITECTURE

Tech Stack:

Layer	Tools/Frameworks	Description
Frontend (App + Web)	Flutter / React.js	Cross-platform mobile & web UI (works offline).
Backend / APIs	FastAPI (Python) / Node.js	Handles requests, authentication, and job matching.
Database	Firebase Firestore / PostgreSQL	Stores users, jobs, and verification records.
AI Engine	Python (scikit-learn / TensorFlow Lite)	Matches workers with jobs based on skills and proximity.
Messaging Layer	Twilio / Gupshup API	For SMS-based job alerts and verification.
Verification / Admin Dashboard	React Admin / Streamlit	For Panchayat verification and dispute management.
Cloud Hosting	Google Cloud / AWS	For backend, database, and model deployment.
Machine Learning	Oracle cloud Inference	Provides AI-driven recommendations for suitable job matches.
AI based voice assistant	Dialogflow / TensorFlow Lite	Enables natural, multilingual voice interaction for users who cannot read or write.

Architecture:

[User App / SMS Interface]



[API Gateway / FastAPI Backend]



[Database + AI Matching Engine]



[Panchayat / Admin Dashboard]



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राष्ट्रीय प्रौद्योगिकी संस्थान दिल्ली
NATIONAL INSTITUTE OF TECHNOLOGY DELHI
(An autonomous institute under the aegis of Ministry of Education, Govt. of India)

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FEASIBILITY AND SHOWSTOPPERS

Feasibility

- Resource Availability (Time, Skills, Tools):
- The team is skilled in Flutter, FastAPI, Firebase, and Python ML.
- Tools like Google Cloud, Streamlit, and Gupshup SMS API are free or offer trial versions.
- The focus is on a basic MVP, which includes worker registration, job matching, and an admin dashboard.

Why it can be built within the Hackathon timeline:

Targeting 1 to 2 days:

- Day 1: UI and basic backend setup & job posting and matching logic
- Day 2: SMS integration and demo-ready UI
- Using reusable open-source libraries will speed up development.

Showstoppers:

- Potential Blockers / Risks:
- Poor network connectivity in rural test scenarios.
- SMS API cost or quota limitations.
- Data mismatch or unverified worker information.
- Mitigation Strategies:
- Offline data sync and local caching for low connectivity.
- Use of open-source or limited free-tier APIs.
- Panchayat-level verification through the admin dashboard.



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USP (UNIQUE SELLING PRICE) & BUSINESS MODEL

USP (Unique Selling Proposition)

What Makes KaamSetu Different?

- AI + Community Trust: Combines AI-based job matching with Panchayat-verified trust system, the first of its kind in rural employment.
- Offline-first + SMS Integration: Works seamlessly in areas with low or no internet.
- Hyperlocal Matching: Connects workers and employers within nearby villages for faster hiring.
- Digital Reputation Cards: Builds long-term credibility for rural workers through verified ratings.
- AI Voice Assistant & ML based feed recommendation for jobs based on your skills.

Business Model

How KaamSetu Generates Value?

Freemium Model:

- Basic access, including job search and SMS alerts, is free for workers.
- Premium employers, like contractors and NGOs, pay for verified hiring and analytics dashboards.
- Government / NGO Partnerships:
- Integration with rural employment schemes, such as MGNREGA and Skill India.
- Funding comes from CSR collaborations and local development projects.

Sustainability Path:

- Revenue comes from verified badge fees, local ads, and skill upskilling partnerships.
- There is potential to scale as a B2G and B2C hybrid platform.

Video Link: https://drive.google.com/drive/folders/1KVP-BsQs04unJTP66yxp5as_ib_bsmQn?usp=sharing