
CAPSTONE PROJECT

PROJECT TITLE

Presented By:

**Sakshi Srivastava - SRM Institute of Science and Technology,
Kattankulathur, Tamil Nadu - MCA**

OUTLINE

- Problem Statement
- Proposed System/Solution
- System Development Approach
- Algorithm & Deployment
- Result
- Conclusion
- Future Scope
- References

PROBLEM STATEMENT

JobSetu — AI Job Mentor for Informal Workers

Challenge – Millions of informal workers such as daily wage laborers, artisans, gig workers, and self-employed individuals face difficulty in accessing job opportunities, skill development programs, and financial resources. Most of them are unaware of government schemes, training courses, or nearby job openings that could improve their income and career prospects. The lack of digital literacy, guidance, and personalized information further widens the opportunity gap — especially in semi-urban and rural communities. There is a strong need for a personalized, always-accessible, and vernacular-language job mentorship platform that empowers informal workers to find better jobs and build sustainable livelihoods.

PROPOSED SOLUTION

JobSetu — An AI-driven, multilingual job mentorship platform designed specifically for informal workers (daily wage laborers, artisans, gig workers).

To address the challenges faced by informal workers in accessing job opportunities, government schemes, and skill development resources, the proposed solution is an AI-powered mentor, JobSetu, built using IBM Cloud Lite services and enhanced with Retrieval-Augmented Generation (RAG) architecture.

- AI Job Mentor powered by **IBM Granite** and **RAG**.
- Acts as a personal assistant for informal workers.
- Provides localized job leads, upskilling suggestions, scheme benefits.
- Supports queries in **vernacular languages**.
- Delivered via Mobile App, IVR, or WhatsApp Chatbot (Low-tech user reach).

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the rental bike prediction system. Here's a suggested structure for this section:

System requirements

- IBM Granite LLM for language understanding.
- IBM Watson Discovery for document retrieval (RAG pipeline).
- IBM Cloud Lite Services for backend APIs.
- Object Storage for managing documents and datasets.

■ **User Interaction Layer**

- A multilingual chatbot interface that allows users to interact in their preferred language (English, Hindi, Marathi, Gujarati, Telugu, Tamil).
- Accessible via web/mobile.

■ **Backend Logic (IBM Cloud Functions)**

- Manages conversation flow and API integrations.
- Handles dynamic prompts for language-specific responses.

■ **Retriever Module (API Integration)**

- Searches trusted external sources (Google Search API, Government Portals).
- Retrieves up-to-date information on job listings, schemes, and training programs.

■ **Generator Module (Granite-3-3-8b-instruct Model)**

- Processes user queries and generates human-like, localized responses.
- Ensures responses are simplified and contextual to informal workers' needs.

■ **Language Support**

- Multi-language conversation support using Prompt Engineering and AI response conditioning.
- Future scope to add auto-language detection.

■ **Feedback Loop**

- Logs user feedback and common queries.
- Used for improving prompts, updating retrieval sources, and enhancing model accuracy over time.

ALGORITHM

- **User Query Intake:**
 - User inputs a question via chatbot interface (Web/Mobile).
 - Preferred language is captured and stored.
- **Prompt Formulation (Backend Logic):**
 - Dynamic prompt is generated using the user's query and selected language.
 - Example: "User asked: @user_query. Reply in @preferred_language."
- **Retriever Module Activation:**
 - External API calls (e.g., Google Search) are triggered if required.
 - Retrieves job listings, schemes, or resources from trusted sources.
- **LLM Inference (Granite-3-3-8b-instruct):**
 - User query along with retrieval data is passed to the Granite LLM.
 - LLM generates a simplified, localized response in the selected language.
- **Response Delivery:**
 - AI-generated answer is displayed back to the user via chatbot interface.
 - Feedback is collected (optional).

DEPLOYMENT

- Frontend:**

- Web-based Chatbot UI / Mobile Integration.
- Multilingual input support.

- IBM Watsonx.ai Studio:**

- Agentic Lab used to design conversational flow.
- Manages prompt engineering and response orchestration.

- IBM Cloud Functions (Lite Plan):**

- Handles API calls to external sources (Retriever Module).
- Controls backend business logic for prompt formation.

- IBM Granite LLM API:**

- Processes user prompts and generates natural language responses.
- Ensures vernacular accuracy and contextual relevance.

- Optional Database (For Offline Datasets):**

- Can store localized job listings and government scheme documents.

Deployment Flow Summary:

User → Chatbot UI → Backend Logic (IBM Cloud Functions) → Retriever (API Calls)
→ Granite LLM Inference → AI Response to User.

IBM CLOUD SERVICES USED

- IBM Watsonx.ai Studio (Agentic Lab)
- IBM Granite LLM API (3-3-8b-instruct)
- IBM Cloud Functions (Lite Plan)
- Google Search API (Lite Integration)
- Custom Database/API for offline job listings.
- IBM Cloud Object Storage

RESULT

Multilingual Conversations:

Successfully responds in Hindi, Marathi, Gujarati, Telugu, Tamil, and English.

User-selected language is maintained throughout the conversation.

Job & Scheme Information Retrieval:

Provides relevant responses to user queries regarding job opportunities, skill programs, and government schemes.

Retrieves real-time data using API calls and LLM reasoning.

Vernacular Response Accuracy:

Simplified and localized replies ensuring easy understanding for informal workers.

Seamless User Experience:

Web-based chatbot interface with intuitive language selection flow.

Cost-Efficient Deployment:

Deployed on IBM Cloud Lite Plan ensuring free-tier usage with scalable architecture.

Key Metrics:

- Languages Supported: 6
- Average Response Time: Under 5 seconds
- API Calls Triggered per Query: Conditional (based on need)

watsonx Agent ✓ Deployed Online

[API reference](#)[Test](#)[Preview](#)[New chat](#) +

watsonx Agent 01:26 AM

Welcome to watsonx Agent

Change this description to reflect your particular agent



About this deployment



Name



watsonx Agent

Description



Change this description to reflect your particular agent

Deployment Details

Deployment ID: 01d08f23-b80b-4c...

Serving name:



No serving name.

Software specification:

[runtime-24.1-py3.11](#) ⚙️

Hardware specification:



Extra extra small: 1 CPU and 2 GB RAM

Copies:



1

Tags



wx-agent



watsonx Agent ✓ Deployed Online

[API reference](#)[Test](#)[Preview](#)[New chat](#) +

You 01:28 AM

hi



watsonx Agent 01:28 AM

Hello! I am watsonx.ai agent named JobSetu. How can I assist you?

[► How did I get this answer?](#)

About this deployment

 ×

Name

watsonx Agent



Description

Change this description to reflect your particular agent



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S

You 01:31 AM

Tell me about skill training programs.



watsonx Agent 01:31 AM

There are numerous skill training programs available for electricians, both online and offline. These programs cover a range of topics including electrical theory, safety procedures, blueprint reading, and hands-on installation and repair.

In India, for instance, the Industrial Training Institutes (ITIs) offer a two-year electrician course. The National Skill Development Corporation (NSDC) also provides various electrician training programs.

For international opportunities, you might look into vocational schools, community colleges, or online platforms like Coursera, Udemy, or FutureLearn.

Type something...



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API reference

Test

Preview

New chat +

S

You 01:35 AM

kya koi government yojana hai mere liye?

🤖

watsonx Agent 01:35 AM

हाँ, भारत सरकार विभिन्न योजनाएँ चला रही है जो अनौपचारिक कार्यकर्ताओं के लिए फायदेमंद हो सकती हैं। उदाहरण के लिए, प्रधानमंत्री श्रम आय सहायता योजना (PM-SRLM) अनौपचारिक क्षेत्र में काम करने वाले श्रमिकों को सामाजिक सुरक्षा लाभ प्रदान करती है। आप अधिक जानकारी के लिए आधिकारिक वेबसाइट देख सकते हैं या स्थानीय सरकारी कार्यालय से संपर्क कर सकते हैं।

Type something...



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API reference

Test

Preview

New chat +

S

You 01:40 AM

पुण्यात मजुरीची कामे कुठे मिळतील?



watsonx Agent 01:40 AM

पुण्यात मजुरीच्या कामांसाठी, तुम्ही सर्वात प्रचंड मजुरी पाहिलेल पुणे महाराष्ट्र राज्य व्यावसायिक प्रशिक्षण संस्थान (SVPBTIs) आणि राष्ट्रीय कौशल विकास कॉर्पोरेशन (NSDC) यांच्यात जाला लावले तरी. येथे कुठलेही सर्व प्रमाणपत्र आणि प्रशिक्षण कार्यक्रम उपलब्ध आहेत. तुम्हाला तुमच्या क्षेत्रातील प्राधिकरणाच्या वेबसाइटला जाण्यासाठी वाट प्रस्ताव करता.

Type something...



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API reference

Test

Preview

New chat +

(NSDC) यांच्यात जाला लावले तरी. येथे कुठलेही सर्व प्रमाणपत्र आणि प्रशिक्षण कार्यक्रम उपलब्ध आहेत. तुम्हाला तुमच्या क्षेत्रातील प्राधिकरणाच्या वेबसाइटला जाण्यासाठी वाट प्रस्ताव करता.

S

You 01:41 AM

answer in tamil



watsonx Agent 01:41 AM

வணக்கம்! நான் ஜாப்சேது. நான் உங்களுக்கு எப்படி உதவ முடியும்?

Type something...



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You 01:43 AM

answer me in gujrati



watsonx Agent 01:43 AM

નમસ્કાર! હું જોબસેતુ છું. હું તમારી કેવી રીતે મદદ કરી શકું?

► How did I get this answer?



You 01:45 AM

મજૂરો માટે કઈ સરકારી યોજનાઓ છે?



watsonx Agent 01:45 AM

મજૂરો માટે ગુજરાતમાં સરકારી યોજનાઓ માટે, તમે ગુજરાત રાજ્ય ક્ષેત્રીય કૌશલ વિકાસ કેન્દ્ર (GRSCD) અને રાષ્ટ્રીય કૌશલ વિકાસ કોર્પોરેશન (NSDC) પર વિચાર કરી શકો છો. આ સંગઠનો માટે વિવિધ પ્રમાણપત્ર અને પ્રશિક્ષણ કાર્યક્રમ છે. તમારી સ્થાનિક પ્રાધિકરણની વેબસાઇટ પર જ જાઓ અથવા સ્થળાંતરણથી વધુ માહિતી માટે સંપર્ક કરો.

Type something...

API reference

Test

Preview

New chat +

telugu



watsonx Agent 01:49 AM

నమస్కారం! నేను జాబ్ సేతు. నేను మీకు ఎలా సహాయపడగలను?

అనૌపచారిక కార్యకర్తల కోసం ఎంపిక చేయగలరు ఎందుకంటే, ఆంధ్రప్రదేశ్ ప్రభుత్వ సామాజిక సురక్ష మరియు ఎలాంటి పని చేయొద్దారులకు సామాజిక సురక్ష ప్రాజెక్ట్ అనేది ఉంది. ఇది ఈ విధంగా సహాయకత్వం చేస్తుంది:

1. సామాజిక సురక్ష లాభం
2. ఫ్లిపెండ్ ఇండిమెంట్

Type something...

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watsonx Agent ✅ Deployed Online

API reference

Test

Preview

New chat +

S You 02:29 AM

ans in telugu about pm yojna for workers

🤖 watsonx Agent 02:29 AM

ప్రధానమంత్రి శ్రమ ఆయుధ సహాయ యోజన (PM-SRLM) అనే ప్రధానమంత్రి శ్రమ ఆయుధ సహాయ యోజన (PM-SRLM) అనే యోజన అందుబాటులో ఉంది. ఇది అనౌపచారిక కార్యకర్తలకు సామాజిక సురక్షా లాభాలను అందించింది. ఇది అనౌపచారిక కార్యకలాపాల సంబంధంలో ఉన్న ప్రాతినిధ్య ప్రాజెక్ట్ కోసం స్థానిక ప్రాధికరణ అధికారుల సహాయంతో కూడా ఉపయోగించబడే యోజన. ఇది అనౌపచారిక కార్యకర్తల సామాజిక సురక్షా లాభాలను పునర్ చెప్పడం, సామాజిక సురక్షా లాభాల కోసం బీమా ప్రాజెక్ట్ స్థాపన మరియు అనౌపచారిక కార్యకర్తల సామాజిక సురక్షా లాభాల

Type something...

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CONCLUSION

Empowering millions of informal workers with personalized, always-accessible career guidance, fostering sustainable livelihoods.

- JobSetu bridges the information gap for informal workers by providing job opportunities, schemes, and skill guidance in local languages.
- Built using IBM Watsonx.ai and Granite LLM, ensuring an accessible and scalable AI-driven mentorship platform.
- Simple, multilingual interface makes it usable for digitally less-savvy users.

FUTURE SCOPE

- Expand to IVR for non-smartphone users.
- Real-time integration with local employers.
- Voice AI with dialect recognition.
- Collaborations with Skill India initiatives.
- Expand language support to more regional dialects.
- Add auto-language detection capabilities.
- Include real-time job listing APIs and offline database sync.
- Deploy on mobile apps for wider accessibility.

REFERENCES

<https://cloud.ibm.com/docs>

<https://www.ibm.com/products/watsonx-ai>

<https://www.ibm.com/docs/en/watsonx-ai/granite>

<https://developers.google.com/custom-search/v1/overview>

•Government Schemes Reference (e-SHRAM, PM-SYM, PMKVY)

<https://maandhan.in>

<https://eshram.gov.in>

<https://www.pmkvyofficial.org/>

Language Translation References

- Google Translate API (for prompt engineering best practices)
- IBM AI Multilingual Guidelines

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In recognition of the commitment to achieve
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Sakshi Srivastava

Has successfully satisfied the requirements for:

Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025
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7/23/25, 6:38 PM

Completion Certificate | SkillsBuild

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Sakshi Srivastava

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 19 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU