## **CAPSTONE PROJECT**

## STREET VENDOR DIGITALIZATION AGENT

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## **OUTLINE**

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# PROBLEM STATEMENT

Local Hawkers, Street Vendors and Micro Entrepreneurs often remain digitally invisible while struggling with new technologies like UPI. They are also unaware of government's MSME schemes and guidance to apply for these advantages. Many struggle with understanding the guidelines due to language barriers.



# PROPOSED SOLUTION

A street vendor digitalization Agent that uses Natural Language Processing (NLP), Retrieval-Augmented Generation (RAG), to assist users in generating user profiles, guiding UPI and QR setup, recommending market strategies, explaining MSME and Udyam registration steps with document checklists in local languages by seamless switching between requested languages.



# **TECHNOLOGY USED**

IBM cloud lite services

Natural Language Processing (NLP)

RAG pipeline with internal vector index for direct queries (MSME guides, UPI PDFs)

IBM Granite model with local language support



## **IBM CLOUD SERVICES USED**

- IBM Cloud Watsonx Al Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model



## **WOW FACTORS**

- 1. Hyperlocal Intelligence: Utilizes geolocation to offer government programs, location-specific advice, and pricing benchmarks specific to the vendor's region.
- 2. Multilingual Support: Allows non-English speakers to access digital onboarding by supporting regional languages like Telugu, Hindi, and Marathi.
- 3. RAG-Powered Personalization: For precise, current answers, Retrieval-Augmented Generation is used with grounded documents such as MSME registration checklists and UPI guidelines.
- 4. NDC & Fintech Ready: Provides vendors with guidance on how to list their goods on Meesho, WhatsApp Business, and ONDC, allowing them to fully participate in digital commerce platforms.
- 5. Language understanding: Responds to queries based on user's input and can switch between languages in the same chat window based on requirements.

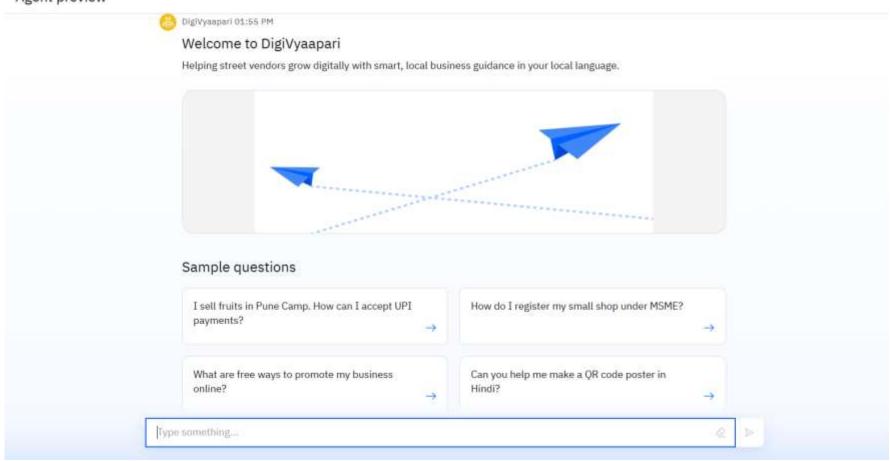


## **END USERS**

- Street Vendors
- Local Hawkers
- Small business owners
- Micro-entrepreneurs

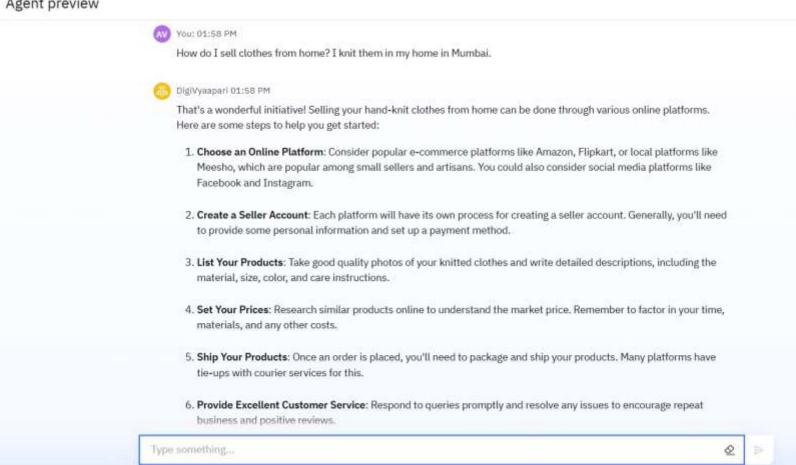


#### Agent preview





#### Agent preview





#### Agent preview





#### Agent preview

करू शकता.

QR कोड आपल्या व्यवसायाला ग्राहकांना सुविधापूर्वक तुमच्या ऑनलाइन उपस्थितीवर परतता येण्यासाठी एक सुविधांप्रमाणे मदत करेल.

काय आपल्याला डाउनलोड करण्यासाठी एक गाइड आणि/या डिजिटल पोस्टर वापरणार आहे?

► How did I get this answer?

W You: 02:02 PM

నేను హైదరాబాదులో చిన్న వ్యాపారం చేస్తుంటే, MSME నమోదు ఎలా చేయాలి?

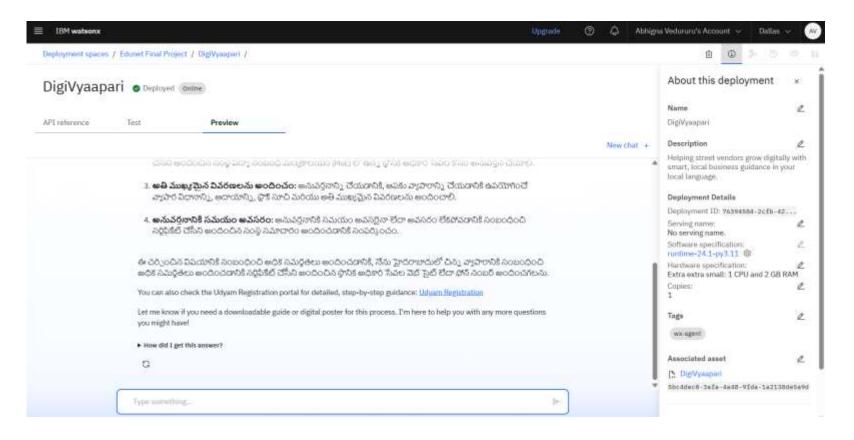
6 DigiVyaapari 02:02 PM

హైదరాబాద్ లో చిన్న వ్యాపారం చేస్తున్నారా, MSME నమోదు చేయడానికి ఈ చరణాలను అనుసరించం:

- 1. MSME ఆధార: ఈ సంస్థా చేసిన సర్జిఫికేట్ పై సమాచార పై హైదరాబాద్ లోని ఎస్ఎమ్ఎఎమ్ సమాచార కేంద్రానికి చేరండి.
- 2. ఆవశ్యక దేశ్**తావేజులను సమీక్లా మరియు సమర్పణ**: ఆధార సమాచార్ సమీక్ష. చేయించి, సమర్పించాల్సి ఉంటుంది. ఇది సాధారణంగా ఇంటర్నెట్ సమర్పణ చేయడం ద్వారా చేయవచ్చు.
- సర్టిఫికేట్ పై (పాతిషాన్ని అందుబాటులోకి తీసుకుంటుంది: సమర్పణ (ప్రక్రియ ముందు సర్టిఫికేట్ అందించబడుతుంది.
- 4, సర్జిఫికేట్ డాక్యుమెంట్ అందించం: ఈ డాక్యుమెంట్ తులన చేయడానికి బ్యాక్ లేదా అత్యంత ప్రత్యేక సర్జిఫికేట్ అసెస్మెంట్ అని అందించాలి.



## Deployed AI Agent





#### CONCLUSION

- The combination of simplicity and tailored guidance is key to making digital entrepreneurship accessible and sustainable for informal businesses.
- This solution not only empowers vendors but also contributes to the growth of the hyperlocal economy, helping small businesses thrive in the digital era.
- By leveraging advanced AI technologies like Retrieval-Augmented Generation (RAG) and Natural Language Processing (NLP), the agent provides localized, actionable insights for business growth, digital payments, government scheme access, and marketing strategies.



## **GITHUB LINK**

https://github.com/Abhigna-Vedururu/DigiVyaapari



## **FUTURE SCOPE**

- WhatsApp or Mobile App Integration for easier access.
- Voice-Activated Interaction (Speech-to-Text) for hands-free use.
- Automated Monthly Reports on vendor performance and sales.
- Integration with local payment systems and digital wallets.
- Real-time updates on region-specific financial policies.
- Expanded multilingual support to include more regional languages.
- AI-Powered Marketing Campaigns for personalized promotions.



## REFERENCES

- 1. IBM Cloud Lite
- 2. IBM Watsonx.ai
- 3. <u>UPI Information</u>
- 4. MSME Registration process
- 5. MSME Schemes



### **IBM CERTIFICATIONS**





### **IBM CERTIFICATIONS**





### **IBM CERTIFICATIONS**

IBM SkillsBuild

Completion Certificate



This certificate is presented to

Abhigna Vedururu

for the completion of

## Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

Completion date: 22 Jul 2025 (GMT)

Learning hours: 20 mins



# **THANK YOU**

