
IBM INTERNSHIP PROJECT

STREET VENDOR DIGITALIZATION AGENT

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College Name & Department : Darshan University
Btech CSE

OUTLINE

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- Proposed Solution
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PROBLEM STATEMENT

- In India, millions of street vendors and micro-entrepreneurs operate informally with limited access to digital tools, financial systems, and localized business strategies. Most of them struggle with visibility, digital payments, customer engagement, and understanding schemes or policies that could help them grow. Language barriers and a lack of tech literacy further prevent them from leveraging online platforms and fintech services.
- To address this, we propose a **Multilingual AI Assistant**, powered by **Watsonx's Granite LLM with Retrieval-Augmented Generation (RAG)**, which interacts with street vendors in their **native languages**. The assistant guides them through:
 - UPI payment setup,
 - Creating online business listings,
 - Accessing government schemes (e.g., MSME benefits),
 - Generating hyperlocal marketing strategies,
 - Providing pricing suggestions and growth tips based on their location and product category.
- Vendors can simply speak or type queries like *“Main Surat mein sabzi bechti hoon, business kaise badhaun?”* and receive relevant, actionable guidance in their local script.
- This AI tool is integrated with **Watsonx Prompt Lab APIs**, deployed via **Make.com**, and accessible through a **simple static UI**, ensuring accessibility, multilingual support, and real-time assistance.

PROPOSED SOLUTION

- To support the digital transformation of local street vendors, we propose building a **Multilingual AI Assistant** using **IBM Watsonx Granite models** and **RAG (Retrieval-Augmented Generation)**. This assistant empowers informal micro-businesses with personalized, local, and real-time guidance.
- **AI-Powered Interaction:**
Vendors can speak or type in their native language (e.g., Hindi, Marathi, Gujarati), describing their business and location.
- **Localized Intelligence:**
The assistant uses RAG to fetch real-time data such as MSME schemes, UPI onboarding guides, and nearby listing platforms tailored to their geolocation.
- **Actionable Business Suggestions:**
Offers pricing tips, QR code setup help, digital branding ideas, and customer engagement strategies.
- **Deployment with Low Token Usage:**
Optimized prompts and responses ensure compatibility with Watsonx Prompt Lab token limits, and easy integration via **Make.com** and a static UI.
- **Model & Infrastructure:**
Built on the **Granite-3.1-2B-Instruct** model, ensuring high-quality language understanding and response generation with minimal cost and fast inference.

TECHNOLOGY USED

- IBM Watsonx.ai – Prompt Lab for model orchestration
- Granite-3.1-2B-Instruct – IBM Foundation Model for multilingual reasoning
- Retrieval-Augmented Generation (RAG) – To fetch real-world data for grounded replies
- Language Detection & Translation – For multilingual input/output support
- Make.com – For API integration between Watsonx and frontend UI
- Webhooks & HTTP Modules – To handle requests and responses between services
- Static Web UI (Render.com) – Lightweight interface for vendor interaction
- HTML/CSS/JS – For basic design and layout
- Responsive Design – Mobile-friendly access for local vendors


IBM CLOUD SERVICES USED




- **Watsonx.ai Studio**
 - Used for prompt engineering and deploying foundation models like Granite-3.1-2B-Instruct
 - Supports structured, chat, and freeform prompt types
 - Provides model inference endpoints for integration with Make.com
 - Includes token monitoring and usage limits
- **IBM Watson Speech to Text (STT)**
 - Converts spoken vendor input into text
 - Supports multilingual transcription (Indian languages included)
 - Enables voice-driven interaction for local street vendors
- **IBM Cloud Object Storage**
 - Stores vendor interaction logs, audio files, and response outputs
 - Useful for maintaining records and improving future model performance
- **IBM Cloud Foundry Runtime / Code Engine** *(if used)*
 - Can be used to deploy backend services or API wrappers
 - Scales automatically based on the workload
- **IBM IAM and API Key Management**
 - Manages secure access to services
 - Provides credentials to safely connect IBM services with external platforms like Make.com.


END USERS


- **Street Vendors & Hawkers**
 - Tea sellers, fruit vendors, food carts, etc., seeking digital visibility and local customer reach.
- **Small Business Owners & Micro-entrepreneurs**
 - Local shopkeepers, kirana stores, and small service providers wanting to go digital.
- **Non-Tech-Savvy Entrepreneurs**
 - Users who prefer voice-based guidance and vernacular language support for onboarding.
- **Government or NGO Field Workers**
 - Supporting digital literacy, MSME registration, and scheme awareness.
- **Fintech Agents or UPI Promoters**
 - Helping vendors adopt UPI and QR-based payment systems.
- **Digital Inclusion Initiatives**
 - State/central programs aiming to formalize the informal economy through AI assistance.





SETTING UP

 IBM watsonx




Upgrade Yashvi Pavagadhi's Account ▾ Dallas ▾ YP 


Projects / Street Vendor / Street Vendor Multilingual Assistant 

AI guardrails on 


 ▾ New prompt + Deploy   

ChatStructuredFreeform

AI Model: granite-3-2b-instruct ▾   TXT </> 

 You: 01:56 PM

You are a multilingual chatbot. Reply in the same language. Keep the answer short, under 50 tokens.

 watsonx 01:56 PM

Understood. I'll provide concise, multilingual responses under 50 tokens, focusing on key information.

Pune - Camp: Fruit seller, offer combo discounts.

Surat - Adajan: Tea stall, serve morning combo.


Lucknow - Hazratganj: Vegetable seller, offer family basket.




Delhi - Chandni Chowk: Street food vendor, combo plate with soft drink.

Mumbai - Dadar: Clothing seller, festive offer: buy 2 get 1 free.

Kolkata - College Street: Book stall, student discount 10%.

Ahmedabad - Maninagar: Juice vendor, buy 1 get 1 Happy Hour.

 vendor_data ×

 Type something...  

AGENT INSTRUCTIONS

The screenshot displays the IBM watsonx web interface. At the top, the navigation bar includes the 'IBM watsonx' logo, an 'Upgrade' button, a help icon, a notification bell, and a user profile dropdown for 'Yashvi Pavagadhi's Account'. The breadcrumb trail shows the path: 'Projects / Street Vendor / Street Vendor Multilingual Assistant'. A secondary bar contains a toggle for 'AI guardrails on' (which is turned on), a save icon, a 'New prompt +' button, and a 'Deploy' button. The main content area is titled 'System prompt' and includes a sub-header explaining that the system prompt instructs the model on how to conduct the dialog. Below this, a yellow warning banner states: 'If you'd like to edit the system prompt, clear chat.' with a 'Clear chat' link. The main text area contains the following system prompt: 'You are Granite, an AI language model developed by IBM in 2024. You are a cautious assistant. You carefully follow instructions. You are helpful and harmless and you follow ethical guidelines and promote positive behavior. You are a AI language model designed to function as a specialized Retrieval Augmented Generation (RAG) assistant. When generating responses, prioritize correctness, i.e., ensure that your response is correct given the context and user query, and that it is grounded in the context. Furthermore, make sure that the response is supported by the given document or context. Always make sure that your response is relevant to the question. If an explanation is needed, first provide the explanation or reasoning, and then give the final answer. Avoid repeating information unless asked.' At the bottom right of the editor, there are 'Cancel' and 'Save' buttons.

IBM watsonx Upgrade ?

Yashvi Pavagadhi's Account Dallas YP

Projects / Street Vendor / Street Vendor Multilingual Assistant

AI guardrails on New prompt + Deploy

System prompt

The system prompt instructs the model on how to conduct the dialog. The prompt is optimized for the selected model. You can edit the following portion of the system prompt.

! If you'd like to edit the system prompt, clear chat. [Clear chat](#)

You are Granite, an AI language model developed by IBM in 2024. You are a cautious assistant. You carefully follow instructions. You are helpful and harmless and you follow ethical guidelines and promote positive behavior. You are a AI language model designed to function as a specialized Retrieval Augmented Generation (RAG) assistant. When generating responses, prioritize correctness, i.e., ensure that your response is correct given the context and user query, and that it is grounded in the context. Furthermore, make sure that the response is supported by the given document or context. Always make sure that your response is relevant to the question. If an explanation is needed, first provide the explanation or reasoning, and then give the final answer. Avoid repeating information unless asked.

Cancel Save

DEPLOYMENT

Street Vendor Hub

Overview

Assets



Deployments

Jobs

Manage

🔍 Search

↺

Name	Type	Status	Asset	Asset type	Tags	Last modified	↓
 Street Vendor Multilingual Assistant	Online	✅ Deployed	Street Vendor Multilingual Assistant	Ai service	<div>wx-vector-index</div> 	53 minutes ago Yashvi Pavagadhi (You)	⋮

API REFERENCE AFTER DEPLOYMENT

[Deployment spaces](#) / [Street Vendor Hub](#) / [Street Vendor Multilingual Assistant](#) /


Street Vendor Multilingual Assistant ✓ Deployed Online


API reference

Test


Endpoints for inferencing ⓘ


Private endpoint

`https://us-south.ml.cloud.ibm.com/ml/v4/deployments/8caa0c3a-f1fb-4408-bff9-24bb4f4bd5b6/ai_service?version=2021-05-01` 

`https://us-south.ml.cloud.ibm.com/ml/v4/deployments/8caa0c3a-f1fb-4408-bff9-24bb4f4bd5b6/ai_service_stream?version=2021-05-01` 

Public endpoint

`https://us-south.ml.cloud.ibm.com/ml/v4/deployments/8caa0c3a-f1fb-4408-bff9-24bb4f4bd5b6/ai_service?version=2021-05-01` 

`https://us-south.ml.cloud.ibm.com/ml/v4/deployments/8caa0c3a-f1fb-4408-bff9-24bb4f4bd5b6/ai_service_stream?version=2021-05-01` 

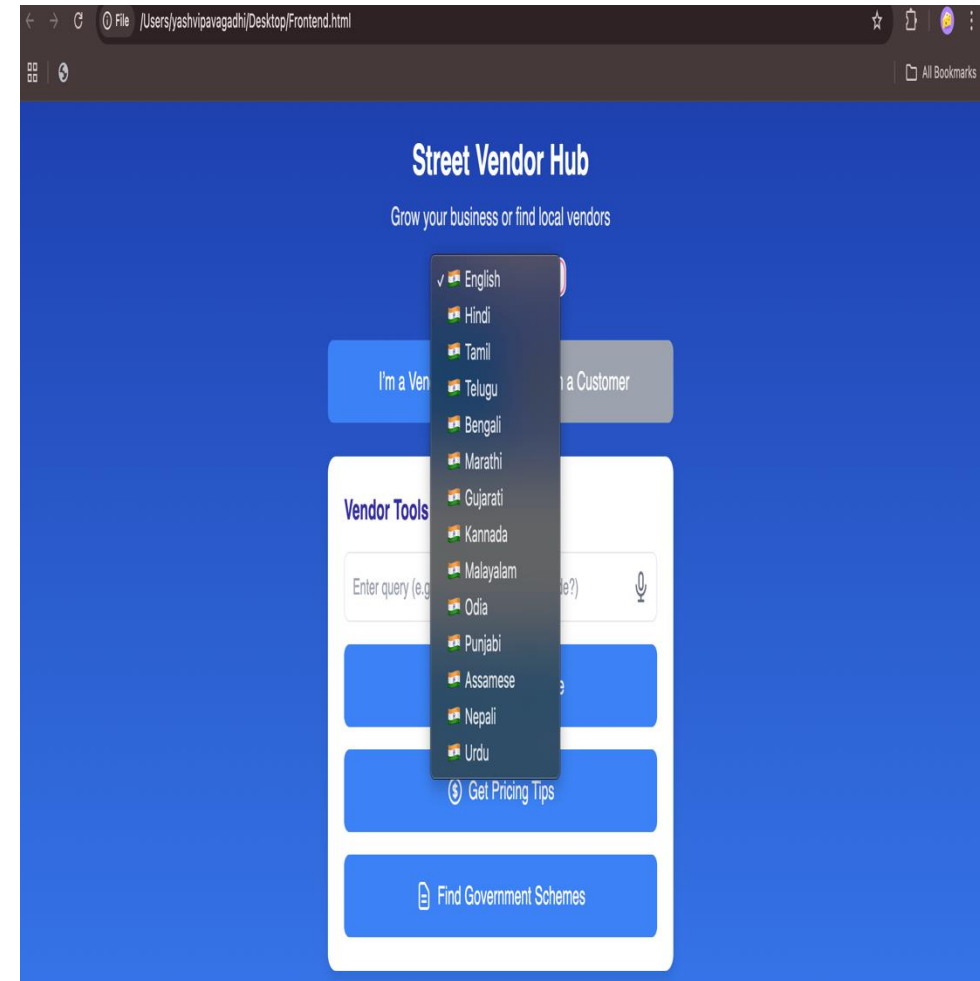
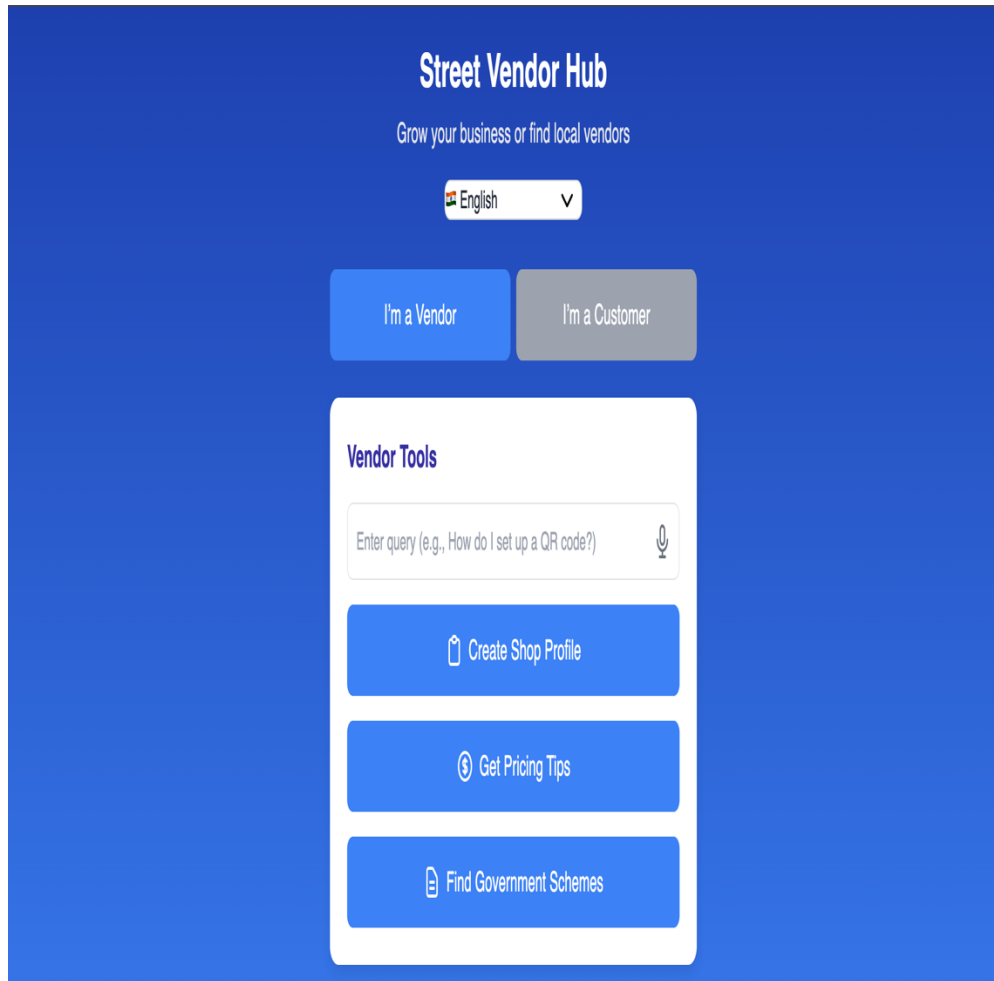
[Learn more](#) about the 2021-05-01 version query parameter

Code snippets

Bearer <token> ⓘ

IAM

UI



RESOURCE LIST

IBM Cloud

Search resources and products...

Q

Catalog

Manage

Yashvi Pavagadhi's Acc...


?




Resource list


Create resource +


Name	Group	Location	Product	Status	Tags
Filter by name or IP address...	Filter by group...	Filter...	Filter...	Filter...	Filter...
Networking (0)					
Storage (1)					
Cloud Object Storage-nm	Default	Global	Cloud Object Storage	Active	cpdaas
Converged infrastructure (0)					
Enterprise applications (0)					
AI / Machine Learning (3)					
Speech to Text-hy	Default	London (eu-gb)	Speech to Text	Active	—
watsonx.ai Runtime-kx	Default	London (eu-gb)	watsonx.ai Runtime	Active	cpdaas
watsonx.ai Studio-ut	Default	London (eu-gb)	watsonx.ai Studio	Active	cpdaas
Analytics (0)					
Blockchain (0)					





RESULTS

 IBM watsonx




Upgrade Yashvi Pavagadhi's Account ▾ London ▾ YP


Projects / Street Vendor / Street Vendor Multilingual Assistant 

AI guardrails on 


 ▾ New prompt + Deploy   

Chat | Structured | Freeform

AI Model: granite-3-8b-instruct   TXT </> 

 You: 12:55 PM

You are a digital assistant for street vendors. Detect the user's language and respond in the same script. Based on their location and business type, suggest pricing tips, online listing platforms, QR code setup, promotional ideas, and local SEO strategies. Provide relevant MSME schemes, UPI setup guides, and digital onboarding steps from reliable sources. Default location is India unless specified.

 watsonx 12:55 PM

Based on your location in Chandni Chowk, Delhi, and your business as a street food vendor, here are some suggestions:


Pricing Tips: Consider offering a combo plate with your popular dishes for ₹50, including a soft drink.




Online Listing Platforms: You can list your business on Zomato Vendor and Google Maps to reach a wider audience.

QR Code Setup: Use BharatPe for QR code setup and settlement. Here's a guide: [BharatPe for QR & settlement](#).


Promotional Ideas: Feature your dishes in Instagram stories to engage with potential customers.






Local SEO Strategies: Use SEO keywords like "chaat Delhi" and "Chandni Chowk street food" to optimize your online


 VendorData ×







 Type something...  


RESULTS





 IBM watsonx



Upgrade Yashvi Pavagadhi's Account  London  YP


Projects / Street Vendor / Street Vendor Multilingual Assistant 

AI guardrails on   New prompt + Deploy   

 Chat | Structured | Freeform


AI Model: granite-3-8b-instruct  TXT 



 You: 12:56 PM

मैं पुणे के कैंप एरिया में फल बेचता हूँ। मुझे अपना कारोबार बढ़ाने के सुझाव दो।

give me reply in hindi

 watsonx 12:56 PM

आपके स्थान कैंप एरिया, पुणे में फल बेचने के साथ, यह सुझाव देने के लिए:

दोहरावपूर्ण सिद्धांत: आप 3 पपी + 2 बादाम के साथ ₹50 में बेचें।



ऑनलाइन लिस्टिंग प्लेटफॉर्म: Amazon Local Seller और Google My Biz पर अपना कारोबार लिस्ट करें।




QR कोड सेटअप: PhonePe मर्चेन्ट साइट पर पंजीकृत हों और QR कोड सेटअप करें।

प्रमोशनल आईडिया: आप घरों के सोसायटी में फ्लायर विज्ञापन वितरित करें।

MSME योजनाएं: PM SVANidhi Yojana और Mudra Loan पर ध्यान दें।

UPI सेटअप: PhonePe एप से बिस्तर कोड सेटअप करें।

 VendorData 

 Type something...  

RESULTS

IBM watsonx

Upgrade

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Projects / Street Vendor / Street Vendor Multilingual Assistant

AI guardrails on

▾ New prompt + Deploy

Chat | Structured | Freeform

AI Model: granite-3-8b-instruct TXT

You: 12:56 PM
હું પુણેના કેમ્પ વિસ્તારમાં ફળો વેચું છું. ઑનલાઇન વેપાર વધારવા શું કરવું?

watsonx 12:56 PM
તમારી સ્થિતિ કેમ્પ, પુણેમાં ફળો વેચવાની સાથે, નીચે મુજબ સંદર્ભો અનુસાર સંદર્ભો આપવામાં આવ્યો છે:

1. ઑનલાઇન લિસ્ટિંગ પ્લેટફોર્મ: Google My Business અને Justdial પર તમારું કારોબાર લિસ્ટ કરો.
2. QR કોડ સેટઅપ: PhonePe એપ પર બિઝનેસ સેટઅપ કરો.
3. MSME યોજનાઓ: PM SVANidhi Yojana અને Mudra Loan પર ધ્યાન કેમકે તે તમારા સ્થાન સાથે સંબંધિત છે.
4. પ્રોમોશનલ આઈડિયા: ઘરોમાં ફ્લાયર વિજ્ઞાપન વિતરિત કરો.
5. ઉપયોગવામાં આવતા ઉપયોગક્રમો: PhonePe એપ માટે QR કોડ સેટઅપ.

આ સંદર્ભો પર આધારિત સંદર્ભો આપવામાં આવ્યો છે, તમારા વ્યાવસાયિક વિશિષ્ટતાઓ અને ગ્રાહકોના પસંદોને ધ્યાનમાં રાખીને તમે આ સંદર્ભોનો ઉપયોગ કરો.

VendorData ×

Type something...

IBM CERTIFICATIONS

- Getting Started with AI



IBM CERTIFICATIONS

- Journey to Cloud: Envisioning Your Solution



IBM CERTIFICATIONS

- RAG Lab

IBM SkillsBuild

Completion Certificate



This certificate is presented to

Yashvi Pavagadhi

for the completion of

**Lab: Retrieval Augmented Generation with
LangChain**

(ALM-COURSE_3824998)

According to the Adobe Learning Manager system of record

Completion date: 24 Jul 2025 (GMT)

Learning hours: 20 mins



THANK YOU