



BankBot AI - Chatbot for Banking FAQs

TEAM THREE MEMBERS:

- Kokilavani M
- SV Maheswari devi Peddireddy
- Mohini Anand Mane
- Shubham Raj



Project Overview:

Problem Background

- ❖ Banks receive a large number of repetitive customer queries daily
- ❖ Manual handling leads to delayed responses and higher workload
- ❖ Customers expect quick and anytime support

Proposed Solution

- ❖ BankBot AI is an AI-based chatbot developed to answer common banking questions
- ❖ Uses NLP techniques to understand user queries
- ❖ Provides instant and accurate responses without human intervention

Advantages

- ❖ Available at all times
- ❖ Reduces manual customer service effort
- ❖ Faster query handling
- ❖ Enhances customer experience

MILESTONE 1: INTENT & ENTITY RECOGNITION

Understanding User Queries

- Identified important banking-related intents such as:
 - Balance enquiry
 - Loan-related queries
 - Debit and credit card services
 - General banking FAQs
- Trained an NLP model using spaCy for intent detection
- Implemented entity extraction to identify details like:
 - Account type
 - Loan type
 - Card category



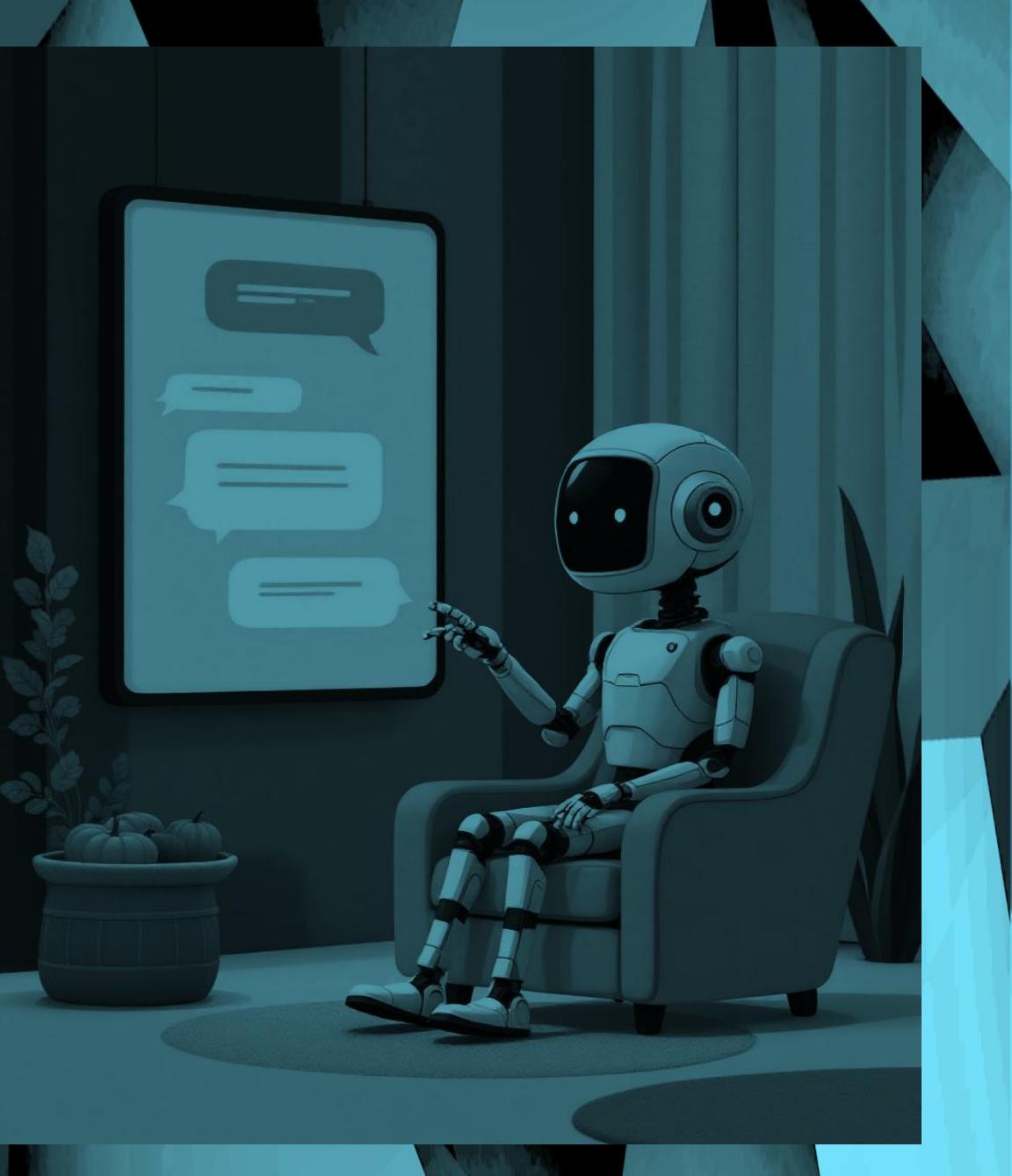
The screenshot shows a Jupyter Notebook interface with the following details:

- File Bar:** File, Edit, Selection, View, Go, Run, Terminal, Help.
- Search Bar:** CAASHMORA_BankBot_UI
- Toolbar:** Includes icons for file operations, search, and help.
- Code Editor:** Displays Python code for feature extraction and model evaluation. The code imports pandas, spacy, TfidfVectorizer, LogisticRegression, Pipeline, classification_report, and warnings from sklearn modules.
- Output Section:** Shows a table of classification results for various intents. The table includes columns for intent name and four performance metrics (accuracy, precision, recall, F1 score) along with their respective counts (352 to 357).

Intent	accuracy	precision	recall	count
open_account	1.00	0.98	0.99	352
otp_resend	1.00	1.00	1.00	355
out_of_scope	1.00	1.00	1.00	356
pancard_update	1.00	1.00	1.00	357
profile_update	1.00	1.00	1.00	353
raise_complaint	1.00	1.00	1.00	355
receipt_request	1.00	1.00	1.00	354
recurring_deposit_info	1.00	1.00	1.00	356
report_fraud	1.00	1.00	1.00	356
salary_credit_issue	1.00	1.00	1.00	355
standing_instruction_setup	1.00	1.00	1.00	357
statement_request	1.00	1.00	1.00	355
sweep_instructions	1.00	1.00	1.00	357
tax_certificate_request	1.00	1.00	1.00	357
thanks	1.00	1.00	1.00	356
track_service_request	1.00	1.00	1.00	356
transaction_dispute	1.00	1.00	1.00	353
transaction_inquiry	1.00	1.00	1.00	354
transfer_cancel	1.00	0.00	0.00	1
transfer_money	1.00	1.00	1.00	355
upi_help	1.00	1.00	1.00	357
accuracy			1.00	30009
macro avg	1.00	0.94	0.94	30009
weighted avg	1.00	1.00	1.00	30009
- Text Output:** Displays 10 random sample intents from the dataset, followed by a sample interaction between a user and a bot.
- Bottom Status Bar:** Includes file status (x 0), line number (Ln 8, Col 34), space count (Spaces: 4), encoding (UTF-8), CRLF, Python version (Python 3.13 (64-bit)), and a Python logo icon.

Result:

The chatbot accurately understands user intent and extracts required information.



MILESTONE 2: DIALOGUE MANAGEMENT

Managing Conversations Effectively

- Designed logical conversation flows using rule-based logic
- Enabled context handling for follow-up questions
- Added fallback responses for invalid or unknown inputs

File Edit Selection View Go Run Terminal Help ← → CAASHMORA_BankBot_UI

app.py db.py milestone_one.py **milestone_two.py** ✘ setup_users.py setup_admin.py

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\kokil\OneDrive\Desktop\CAASHMORA_BankBot_UI> & C:\Users\kokil\AppData\Local\Programs\Python\Python313\python.exe c:/Users/kokil/OneDrive/Desktop/CAASHMORA_BankBot_UI/milestone_two.py
Welcome to CAASHMORA Bank Virtual Assistant (Milestone 2).
Type 'exit' to end the chat.

You: Hi

Bot: Hello, how may I assist you?

You: Check my balance

Bot: Please provide your account number to view the balance.

You: 8123623741

Bot: The current balance for account 8123623741 is ₹306,500.

You: Pay

Bot: To whom would you like to transfer money?

You: Tharunika S

Bot: Please provide Tharunika S's account number.

You: 8912672463

Bot: Please provide Tharunika S's account number.

Ln 7, Col 43 Spaces: 4 UTF-8 CRLF {} Python Python 3.13 (64-bit)

Result:

The chatbot maintains smooth and meaningful conversations with users.

MILESTONE 3: USER INTERFACE DEVELOPMENT

User Interface & Integration

Frontend Development

- Developed chatbot interface using HTML, CSS, and JavaScript

Backend Connectivity

- Connected frontend with **Flask** backend using APIs
- Enabled real-time communication between user and chatbot

UI Enhancements

- Simple and clean interface
- Proper validation and error handling





Welcome, Muruga S!

Account Balance
₹307500

Account Number
8123623741

Account Type
Savings Account

IFSC Code
CAASH0001234

Branch
Pondicherry Main Branch

Date and Time	Transaction	Mode	Amount	Status
2025-11-13 12:44:45	Sent to Tharunika S	UPI	₹500	<input checked="" type="checkbox"/> Successful
2025-11-12 20:31:29	Received from Tharunika K	Bank Transfer	₹10000	<input checked="" type="checkbox"/> Successful
2025-11-12 20:22:13	Sent to Krishna P	UPI	₹500	<input checked="" type="checkbox"/> Successful
2025-11-11 05:12:54	Received from Tharunika K	Bank Transfer	₹50000	<input checked="" type="checkbox"/> Successful
2025-11-11 03:11:04	Sent to Tharunika	UPI	₹500	<input checked="" type="checkbox"/> Successful

Profile Details

Name: Muruga S
Customer ID: CUST3741
Email: muruga.ca@gmail.com
Phone: 6513429873
Address: Pondicherry, India
 KYC Verified

CAASHMORA Assistant

Hello! I'm your CAASHMORA Bank Assistant. How can I help you today?

hi

Hello, how may I assist you?

Intent: greet

Check my account balance

Please provide your account number to view the balance.

Intent: balance_enquiry

8123623741

The current balance for account 8123623741 is ₹307,500.

Intent: check_balance

Type your message...

Send



Result:

A fully functional and responsive chatbot UI was successfully integrated with the backend, enabling smooth real-time user interaction.

MILESTONE 4: ADMIN & KNOWLEDGE MANAGEMENT

Administration and Maintenance

- Created an admin panel to manage:
 - Banking FAQs
 - Training data
 - User interaction logs
- Added analytics support for monitoring chatbot usage
- Provided retraining option to improve chatbot accuracy



Dashboard

User Queries

FAQs

Training Data

Chat Logs

Export Logs

Welcome, Admin

Total Queries
30009**Total Intents**
76**Accuracy**
99.3%**Last Retrained**
05-12-2025 12:32:40 AM

Recent User Queries

User	Query	Intent	Confidence	Date
8123623741	upi	transfer_money	70.0%	2025-12-06 09:55:15
8123623741	500	transfer_money	70.0%	2025-12-06 09:55:11
8123623741	8912672463	transfer_money	70.0%	2025-12-06 09:55:08
8123623741	Tharunika S	transfer_money	70.0%	2025-12-06 09:54:51
8123623741	pay	transfer_money	70.0%	2025-12-06 09:54:44

Export Logs as CSV

Result:

A fully functional admin panel was implemented to manage data, monitor chatbot performance, and support model retraining.

TECHNOLOGY USED

Tools & Technologies



- ✓ Python - Core programming language
- ✓ Flask - Backend framework
- ✓ SpaCy - NLP processing
- ✓ HTML, CSS, JavaScript - Frontend interface
- ✓ SQLite - Data storage
- ✓ Local / Cloud Deployment

PROJECT OUTCOMES

Results Achieved

- Successfully automated frequently asked banking queries
- Reduced dependency on manual customer support
- Delivered fast and reliable chatbot responses
- Built a system that can be improved with new data



FUTURE ENHANCEMENTS

- **Real-Time Banking API Integration**
Connect the chatbot with live banking systems to provide real-time balance, transaction, and account details.
- **Voice-Based Interaction**
Enable voice input and output to improve accessibility and user convenience.
- **Multilingual Support**
Extend the chatbot to support multiple languages for better user reach.
- **Advanced Analytics Dashboard**
Enhance the admin panel with detailed analytics on user behavior, intent trends, and performance metrics.
- **Improved Model Accuracy**
Continuously retrain the NLP model using larger and more diverse datasets to improve response quality.





Thank You

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