



# BankBot AI – Chatbot for Banking FAQs

## TEAM THREE MEMBERS:

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# 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



File Edit Selection View Go Run Terminal Help CAASHMORA\_BankBot\_UI

app.py db.py milestone\_one.py X milestone\_two.py setup\_admin.py

```

1 import pandas as pd
2 import spacy
3 from sklearn.feature_extraction.text import TfidfVectorizer
4 from sklearn.linear_model import LogisticRegression
5 from sklearn.pipeline import Pipeline
6 from sklearn.metrics import classification_report
7 import warnings

```

	1.00	0.98	0.99	352
open_account	1.00	1.00	1.00	355
otp_resend	1.00	1.00	1.00	356
out_of_scope	1.00	1.00	1.00	357
pancard_update	1.00	1.00	1.00	353
profile_update	1.00	1.00	1.00	355
raise_complaint	1.00	1.00	1.00	354
receipt_request	1.00	1.00	1.00	356
recurring_deposit_info	1.00	1.00	1.00	356
report_fraud	1.00	1.00	1.00	355
salary_credit_issue	1.00	1.00	1.00	357
standing_instruction_setup	1.00	1.00	1.00	355
statement_request	1.00	1.00	1.00	357
sweep_instructions	1.00	1.00	1.00	357
tax_certificate_request	1.00	1.00	1.00	356
thanks	1.00	1.00	1.00	356
track_service_request	1.00	1.00	1.00	353
transaction_dispute	1.00	1.00	1.00	354
transaction_inquiry	1.00	0.00	0.00	1
transfer_cancel	1.00	1.00	1.00	355
transfer_money	1.00	1.00	1.00	357
upi_help	1.00	1.00	1.00	30009
accuracy			1.00	30009
macro avg	1.00	0.94	0.94	30009
weighted avg	1.00	1.00	1.00	30009

=== 10 RANDOM SAMPLE INTENTS FROM DATASET ===

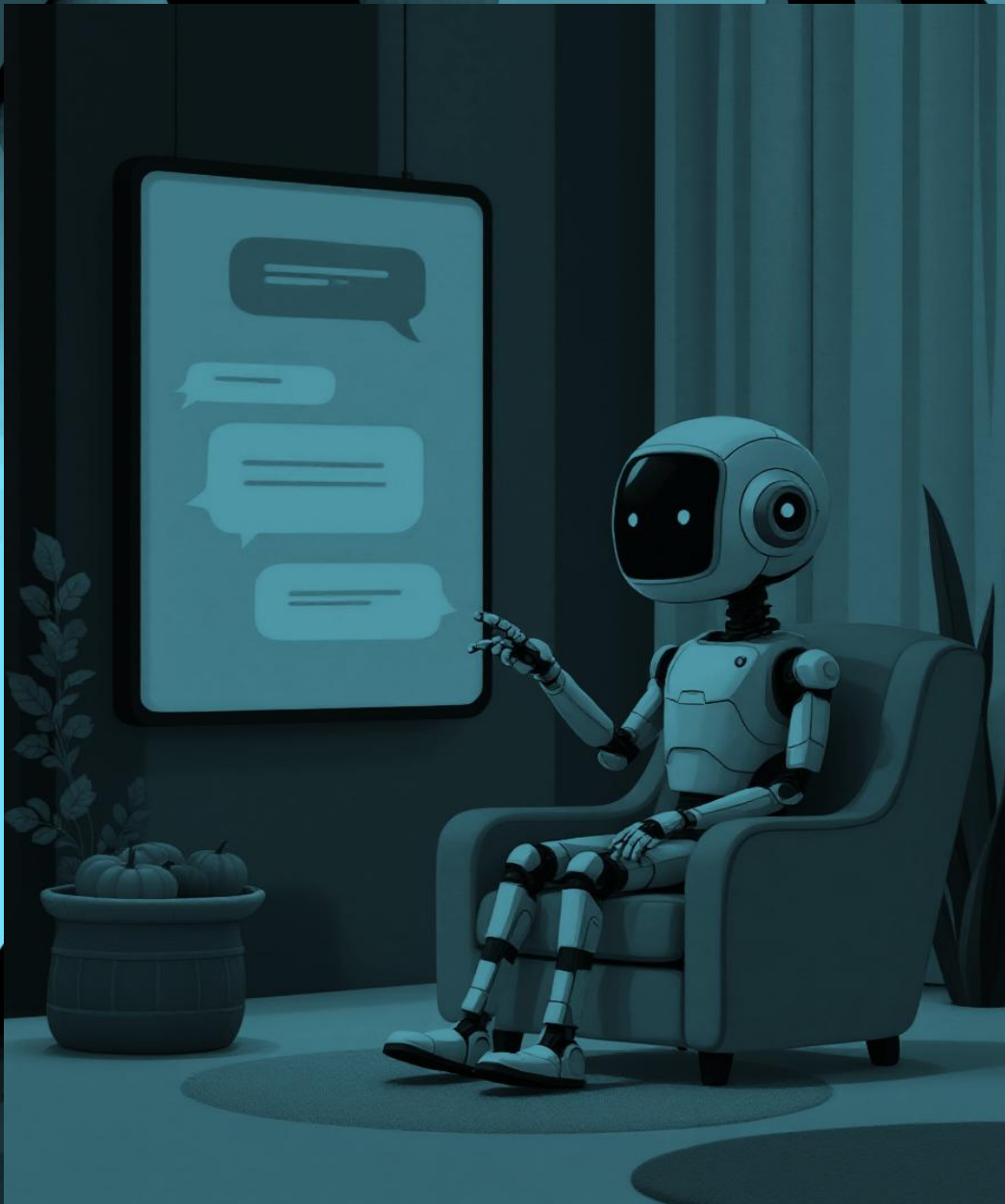
- Sample Query: Would you I need help with salary credit issue. [b19c61] please.
- Predicted Intent: salary\_credit\_issue
- Extracted Entities: {}
- Bot Response: Sure. Salary credit issue logged. Please provide employer details.

- Sample Query: Kindly Provide information about greet. [9bd902] please.
- Predicted Intent: greet
- Extracted Entities: {}
- Bot Response: Okay. Information for greet: please provide further details. Please confirm.

Ln 8, Col 34 Spaces: 4 UTF-8 CRLF Python 3.13 (64-bit)

## 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

milestone_two.py > ...
1 import pandas as pd
2 import re
3 import random
4 import string
5 from sklearn.feature_extraction.text import TfidfVectorizer
6 from sklearn.linear_model import LogisticRegression
7 from sklearn.pipeline import make_pipeline

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
python +v

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

Predicted Intent: greet
Extracted Entities: {}
Bot: Hello, how may I assist you?

You: Check my balance

Predicted Intent: balance_enquiry
Extracted Entities: {}
Bot: Please provide your account number to view the balance.

You: 8123623741

Predicted Intent: check_balance
Extracted Entities: {'account': '8123623741'}
Bot: The current balance for account 8123623741 is ₹306,500.

You: Pay

Predicted Intent: transfer_money
Extracted Entities: {}
Bot: To whom would you like to transfer money?

You: Tharunika S

Predicted Intent: transfer_money
Extracted Entities: {}
Bot: Please provide Tharunika S's account number.

You: 8912672463

Predicted Intent: transfer_money
Extracted Entities: {}
```

## 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

#### Profile Details

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

Date and Time	Transaction	Mode	Amount	Status
2025-11-13 12:44:45	Sent to Tharunika S	UPI	₹500	✓ S
2025-11-12 20:31:29	Received from Tharunika K	Bank Transfer	₹10000	✓ S
2025-11-12 20:22:13	Sent to Krishna P	UPI	₹500	✓ S
2025-11-11 05:12:54	Received from Tharunika K	Bank Transfer	₹50000	✓ S
2025-11-11 03:11:04	Sent to Tharunika	UPI	₹500	✓ S

#### 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

RA Admin Panel

all\_chat\_logs (1).csv

37.1 KB • Done

Logout

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

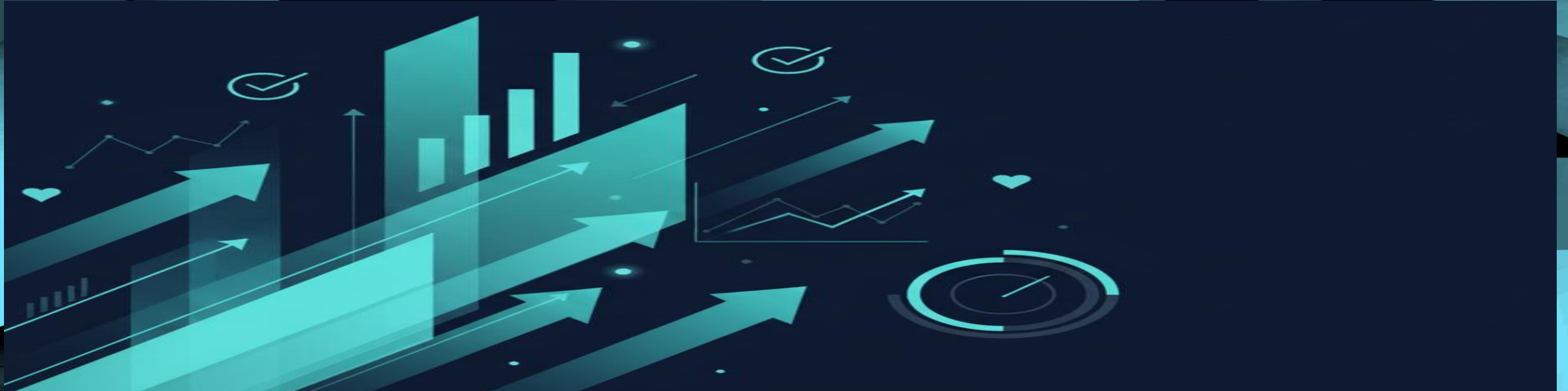
- ✓ Python – Core programming language
- ✓ Flask – Backend framework
- ✓ SpaCy – NLP processing
- ✓ HTML, CSS, JavaScript – Frontend interface
- ✓ SQLite – Data storage
- ✓ Local / Cloud Deployment



# PROJECT OUTCOMES

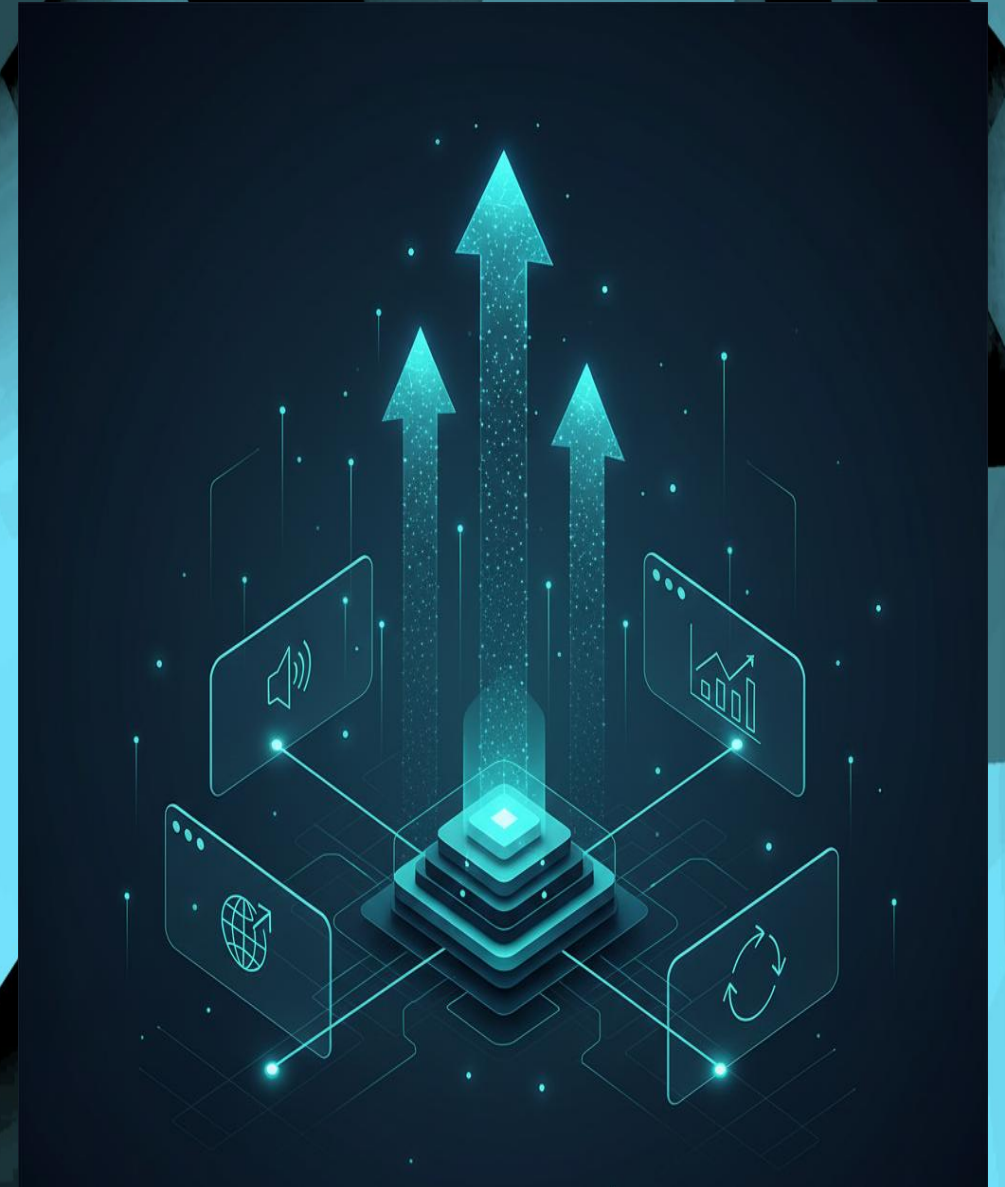
## Results Achieved

- 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

I would like to sincerely thank  
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