

# *BankBot AI Chatbot for Banking FAQs*

## *MILESTONE-1*

- Enable the chatbot to understand **user intent** from natural language queries
- Extract **key entities** required for banking operations
- Form the foundation for dialogue management and backend actions
- Ensure reliable interpretation of user requests before execution

### *Key Intents Defined*

> check\_balance (40 examples)

> transfer\_money (40 examples)

> card\_block (40 examples)

> find\_atm (40 examples)

- **Check Balance** – User queries account balance
- **Transfer Money** – User initiates fund transfer
- **Card Block** – User requests card blocking
- **Find ATM** – User searches for nearby ATMs

### **Intent Design Strategy**

- Included **variations in language, tone, and phrasing**
- Covered both **formal and informal queries**
- Ensured intent separation to avoid overlap
- Collected **realistic user utterances**

### **Entity Recognition**

- **Amount** – Money involved in transactions
- **Account Type** – Savings/ current
- **Date**- Transaction or request timing
- **Location**- ATM or branch search

## Intent Recognition

find\_atm

76.5%

transfer\_money

8.2%

card\_block

8.0%

check\_balance

7.4%

## Entity Extraction

No entities found

# NLU Visualizer

## BORRA SRI LAKSHMI's BankBot NLU Engine

### Intents (edit & add)

> check\_balance (40 examples)

> transfer\_money (40 examples)

> card\_block (40 examples)

> find\_atm (40 examples)

### NLU Visualizer

User Query

Analyze

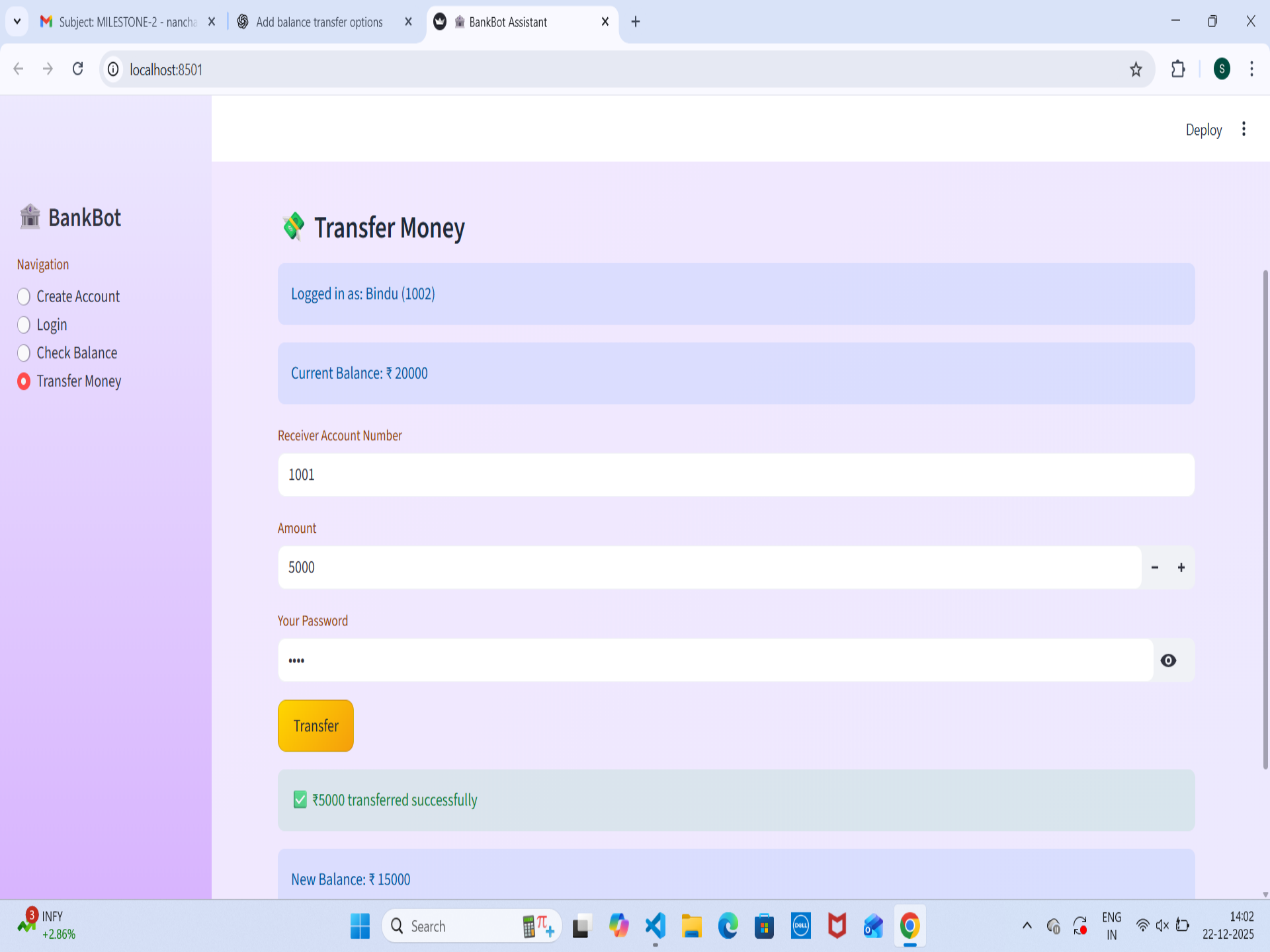
# MILESTONE-2

## *Response Handling & Dialogue Flow*

- Control conversation flow after intent recognition
- Handle multi-step banking operations
- Generate accurate and secure system responses
- Manage errors, fallback scenarios, and casual interactions
- Improve overall user experience and reliability

### *Money Transfer Dialogue Flow*

- User selects **Transfer Money**
- System verifies login status
- Displays current account balance
- Collects receiver account number
- Collects transfer amount
- Verifies password
- Confirms transaction
- Updates balance and displays success message



# **MILESTONE-3**

## **UI Integration & Chat Interface**


- Provide an intuitive and user-friendly chat interface.
- Enable real-time interaction with the chatbot.
- Integrate frontend UI with backend NLU and dialogue engine.
- Handle user errors and edge cases gracefully.
- Improve overall user experience and accessibility.


### **Chat Interface Design**


- Simple and clean chatbot screen
- Text input box for user queries
- Send button for message submission
- Sidebar navigation for banking actions
- Responsive layout for better usability

# Navigation & User Flow

## Chatbot

 **BankBot**  
**Navigation**  
Go to  
☒ Chatbot  
☐ Create Account  
☐ Login  
☐ Check Balance  
☐ Transfer Money  
☐ User Query  
☐ Database  
☐ Logout

 **Bank Chatbot**  
Ask anything (banking or general question)  
  
**Send Chat**



## Machine Learning: An Overview

Machine learning is a subset of artificial intelligence (AI) that involves the use of algorithms and statistical models to enable machines to learn from data, make decisions, and improve their performance over time.

**Key Characteristics:**

1. **Data-driven:** Machine learning relies on large amounts of data to learn and make predictions.
2. **Algorithmic:** Machine learning uses algorithms to analyze data and make decisions.
3. **Self-improving:** Machine learning models can improve their performance over time through experience and learning.

**Types of Machine Learning:**

1. **Supervised Learning:** The model is trained on labeled data to learn the relationship between input and output.
2. **Unsupervised Learning:** The model is trained on unlabeled data to identify patterns and relationships.
3. **Reinforcement Learning:** The model learns through trial and error by interacting with an environment and receiving feedback.

**Machine Learning Applications:**



Search




ENG  
IN



15:56  
31-12-2025

# Create Account

 **BankBot Navigation**

Go to

☐ Chatbot

☒ Create Account

☐ Login

☐ Check Balance

☐ Transfer Money

☐ User Query

☐ Database

☐ Logout

NEW

Create Account

Account Number

1006

Username

Anu

Password

....

👁

Account Type

Savings

▼

Initial Balance

7000

- +


Create Account Now

✔ Account created successfully



16:01 31-12-2025

# Login

 **BankBot Navigation**

Go to

☐ Chatbot

☐ Create Account

☒ Login


☐ Check Balance

☐ Transfer Money

☐ User Query

☐ Database

☐ Logout

 Login

Username

Anu

Password

....

Login Now

✔ Welcome Anu



## Check Balance

### BankBot Navigation

Go to

- ☐ Chatbot
- ☐ Create Account
- ☐ Login
- ☒ Check Balance
- ☐ Transfer Money
- ☐ User Query
- ☐ Database
- ☐ Logout



## Check Balance



Your balance is ₹7000

## Transfer Money

### BankBot Navigation

Go to

- ☐ Chatbot
- ☐ Create Account
- ☐ Login
- ☐ Check Balance
- ☒ Transfer Money
- ☐ User Query
- ☐ Database
- ☐ Logout



## Transfer Money

Receiver Account Number

1004

Amount

2000

Transfer Now



Transfer successful

# User Query

BankBot Navigation

Go to

Chatbot

Create Account

Login

Check Balance

Transfer Money

User Query

Database

Logout

User Query

Ask any question

Explain python

Submit Query

Introduction to Python

Python is a high-level, interpreted programming language that is widely used for various purposes such as web development, scientific computing, data analysis, artificial intelligence, and more. It was created in the late 1980s by Guido van Rossum and was first released in 1991.

Key Features of Python

1. Easy to Learn: Python has a simple syntax and is relatively easy to learn, making it a great language for beginners.

2. High-Level Language: Python is a high-level language, meaning it abstracts away many low-level details, allowing developers to focus on the logic of their program.

3. Interpreted Language: Python code is interpreted line by line, making it easier to write and test code.

4. Object-Oriented: Python supports object-oriented programming (OOP) concepts such as classes, objects, inheritance, and polymorphism.

5. Large Standard Library: Python has a vast collection of libraries and modules that make it easy to perform various tasks, such as file I/O, networking, and data analysis.

Basic Syntax

Search

16:12 31-12-2025

# Database

BankBot Navigation

Go to

Chatbot

Create Account

Login

Check Balance

Transfer Money

User Query

Database

Logout

All Accounts

	0	1	2	3
0	1001	srilakshmi	Savings	5000
1	1002	bindu	Savings	3300
2	1003	harsha	Savings	2700
3	1004	sai	Savings	3000
4	1006	Anu	Savings	5000

Delete All Accounts

Search

16:14 31-12-2025

# Logout

## **BankBot** Navigation

Go to

- ☐ Chatbot
- ☐ Create Account
- ☐ Login
- ☐ Check Balance
- ☐ Transfer Money
- ☐ User Query
- ☐ Database
- ☒ Logout

 Logged out successfully

# **BankBot Admin Project**

## **Milestone-4**

What is BankBot?

- AI-powered banking assistant for queries and customer support.
- Purpose of Admin Panel:
- Manage intents & knowledge base.
- Test chatbot queries.
- Monitor analytics & user interaction

### **Project Objectives**

- ❖ Provide a **user-friendly interface** for bank staff/admins.
- ❖ Add, edit, and delete **intents and knowledge base articles**.
- ❖ Test chatbot with **real user queries**.
- ❖ View **analytics & confidence levels** for each intent.
- ❖ Export analytics data to **PDF reports**.

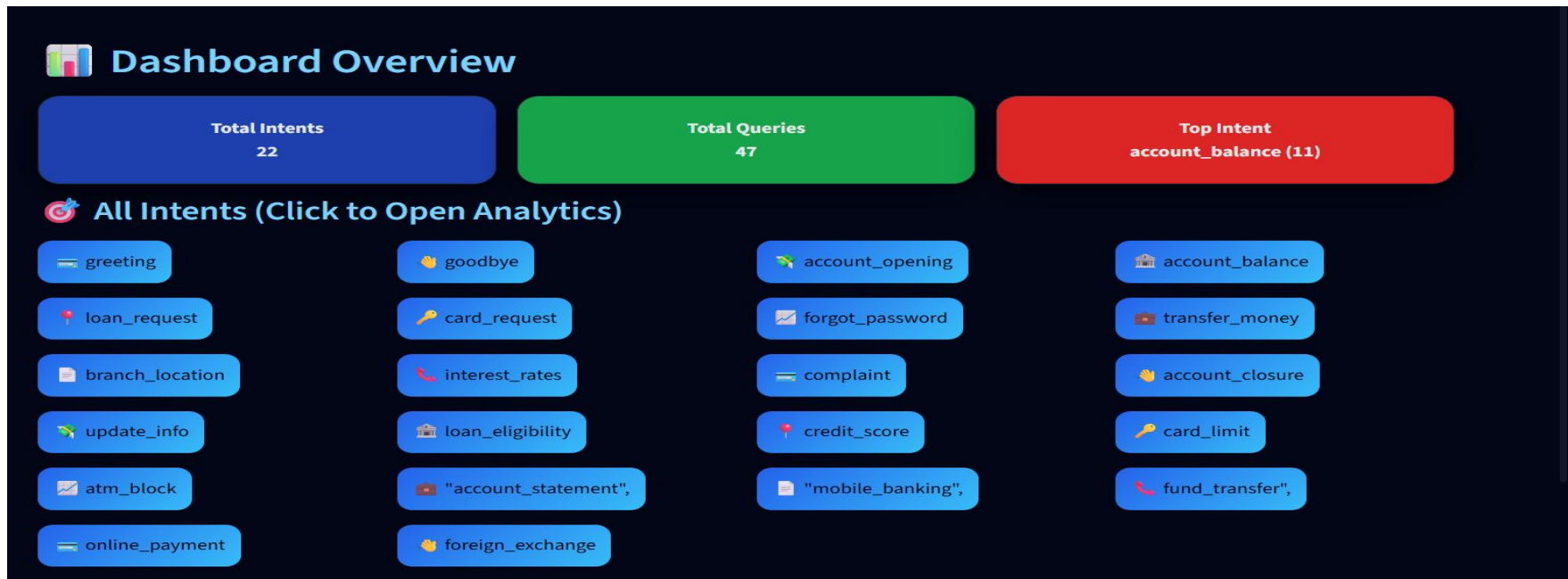
# Tools & Technologies

- ❑ **Frontend:** Streamlit (Python)
- ❑ **Backend & Storage:** JSON files for intents, knowledge base, and analytics.
- ❑ **NLP & AI:** TF-IDF vectorizer + Cosine similarity for intent detection.
- ❑ **Visualization:** Altair charts (line, bar, donut)
- ❑ **PDF Export:** ReportLab library
- ❑ **Python Libraries:** pandas, sklearn, datetime, json, reportlab

## Features – Admin Panel

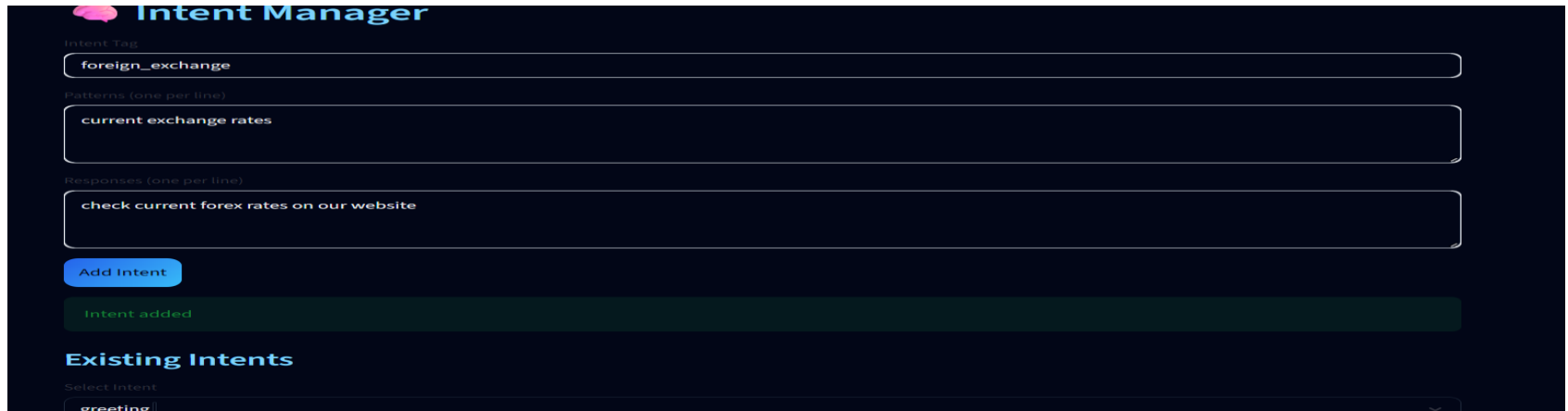
### 1. Dashboard Overview

1. Total Intents, Total Queries, Top Intent.
2. Interactive colored cards and intent buttons.



## 2.Intent Manager:

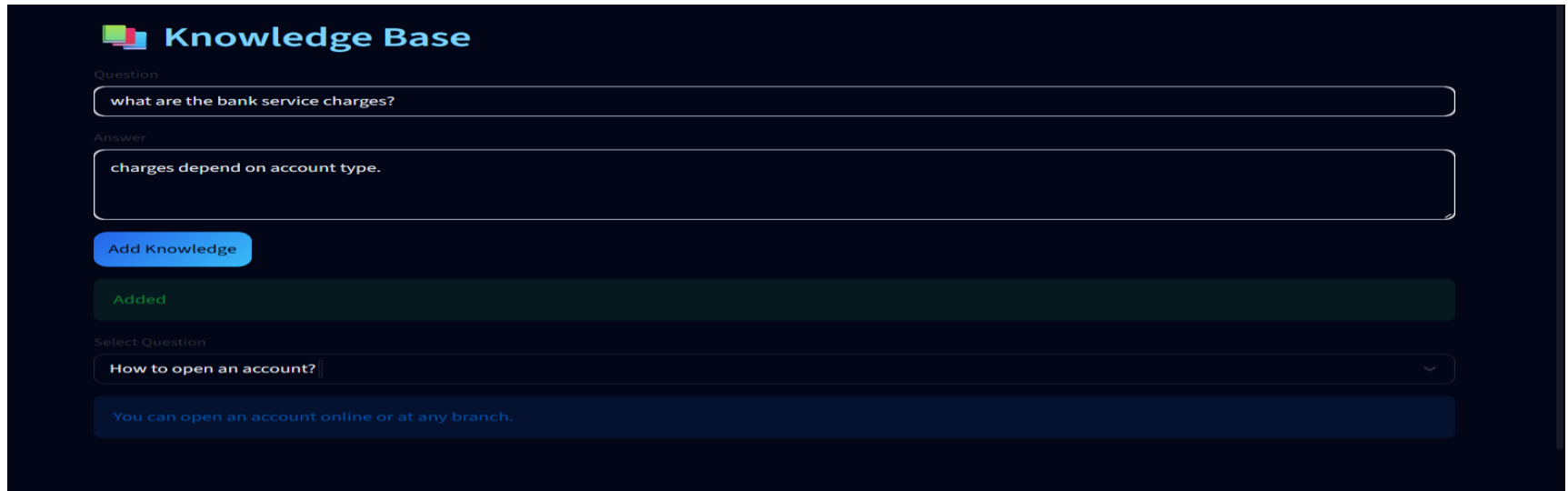
- ❑ Add, edit, view intents



The screenshot shows the 'Intent Manager' interface. At the top, there's a title 'Intent Manager' with a speech bubble icon. Below it, there are three input fields: 'Intent Tag' with the value 'foreign\_exchange', 'Patterns (one per line)' with the value 'current exchange rates', and 'Responses (one per line)' with the value 'check current forex rates on our website'. Below these fields is a blue 'Add Intent' button. A green notification bar below the button says 'Intent added'. Underneath is a section titled 'Existing Intents' with a dropdown menu labeled 'Select Intent' showing 'greeting'.

## 3.Knowledge Base:

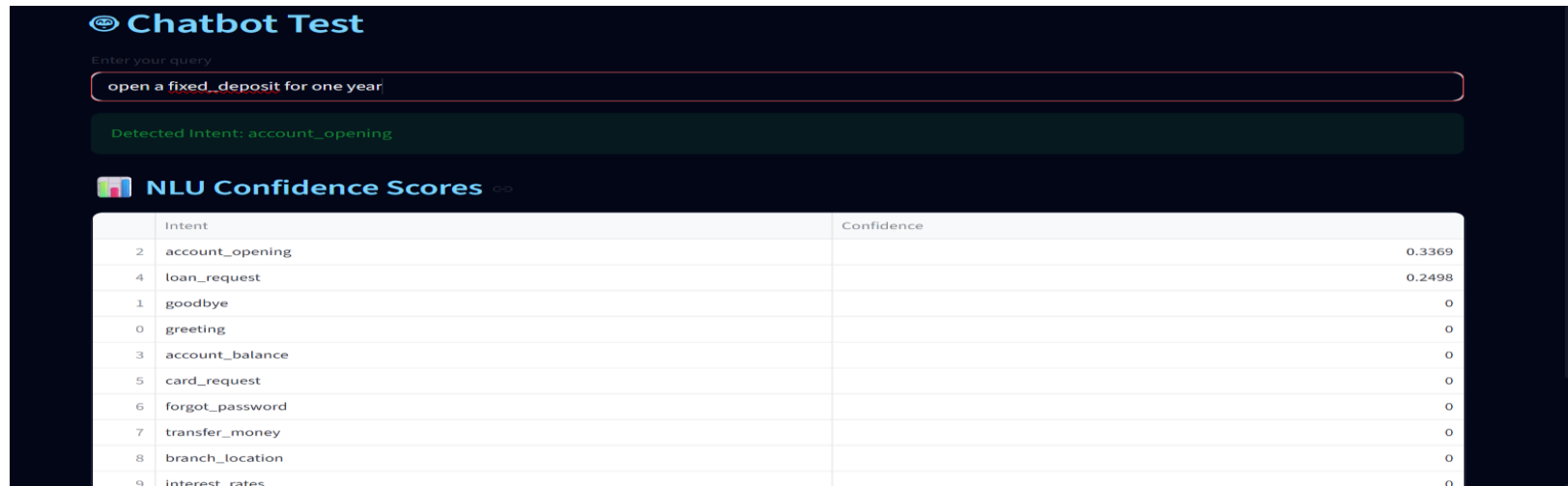
- ❑ Add questions & answers



The screenshot shows the 'Knowledge Base' interface. At the top, there's a title 'Knowledge Base' with a document icon. Below it, there are two input fields: 'Question' with the value 'what are the bank service charges?' and 'Answer' with the value 'charges depend on account type.'. Below these fields is a blue 'Add Knowledge' button. A green notification bar below the button says 'Added'. Underneath is a section titled 'Select Question' with a dropdown menu showing 'How to open an account?'. Below the dropdown is a blue bar containing the text 'You can open an account online or at any branch.'

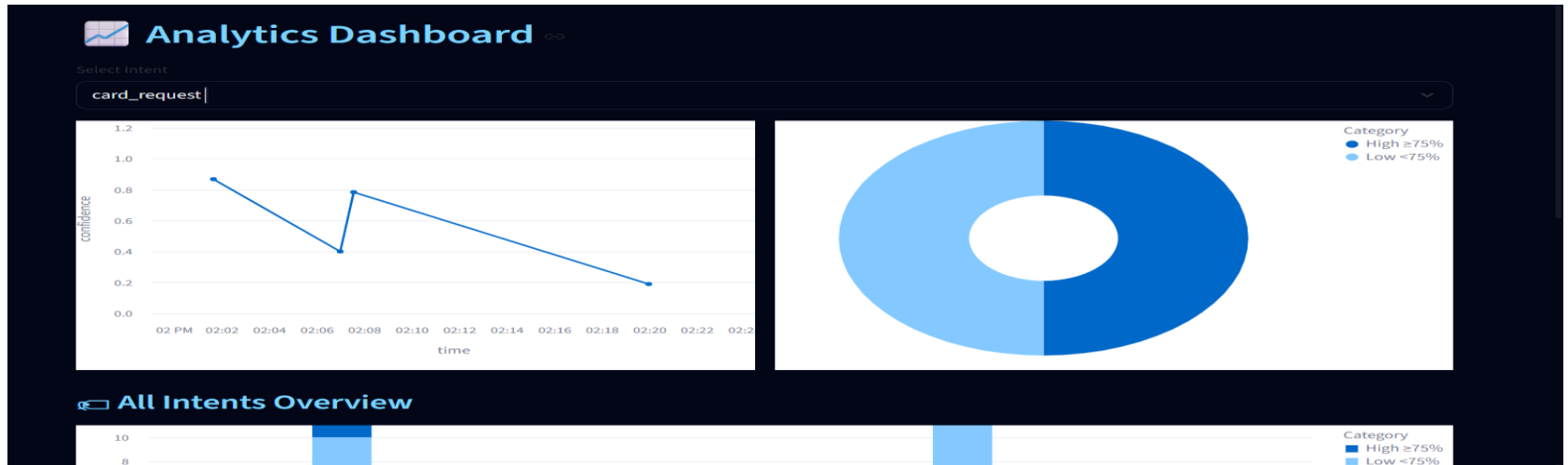
### 3.Chatbot Test:

❑ Input queries & see NLU scores



### 4.Analytics:

❑ Interactive charts, donuts, line charts



## 5.Export PDF:

☐ Download reports in table format5.

### BankBot Analytics Report

#### Intent: account\_balance

Time	Query	Confidence
2026-01-09 16:58:05	"Check my personal loan status"	0.307
2026-01-09 16:45:00	how do i deposit cash in my account	0.217
2026-01-09 14:18:56	Account closure procedure	0.265
2026-01-09 14:18:22	what is my current balance	0.562
2026-01-09 14:17:11	Terminate my account	0.403
2026-01-09 14:05:46	display my account info	0.332
2026-01-09 14:05:07	show balance	0.457
2026-01-09 14:04:42	balance inquiry	0.457
2026-01-09 13:48:45	check my balance	0.807
2026-01-09 13:32:09	check my loan_eligibility	0.381
2026-01-09 13:13:19	nan	0.381

#### Intent: greeting

Time	Query	Confidence
2026-01-09 16:05:36	loan_info	0.000
2026-01-09 14:09:42	pay bills online	0.000
2026-01-09 14:09:18	make a payment	0.000
2026-01-09 14:03:56	investment options	0.000
2026-01-09 14:02:35	home_loan info	0.000
2026-01-09 13:54:40	home_loan info	0.000