

A Voice-Controlled AI Assistant with Automated Movie Ticket Booking and UPI Payment System

¹Mayank Kumar, Department of Artificial Intelligence and Data Science, IIMT College of Engineering, Greater Noida.

Abstract

This paper introduces a next-generation AI-based digital voice assistant capable of performing a wide range of human-like tasks. The assistant integrates speech recognition, natural language intent detection, web search, email automation, weather forecasting, Wikipedia query retrieval, and a groundbreaking automated ticket booking system powered by UPI-based QR payment verification. The novelty of this system lies in its ability to conduct financial transactions using purely voice-driven interfaces. The paper explores the system design, architecture, implementation roadmap, functional modules, and performance evaluation.

Keywords: AI, QR Payment Verification, Digital Voice Assistant.

Introduction

Voice assistants and conversational AI systems have become foundational components in the modern human–machine interaction landscape. Most commercial assistants such as Google Assistant, Siri, and Alexa rely on large-scale AI models and enterprise-level infrastructure. The goal of this research was to develop an equally capable yet lightweight assistant using Python and publicly available APIs. The assistant performs multi-step logical operations, enabling end users to complete tasks without manual typing or physical interaction.

This paper uniquely integrates automated UPI payment and QR code generation within the voice assistant, making it capable not only of information retrieval but also real-world e-commerce transaction workflows. The system demonstrates how multi-module integration can be achieved efficiently using Python ecosystems.

System Overview

Overall System Architecture: User → Speech Engine → NLP Parser → Action Manager → Output Engine

Literature Review

Much research has explored speech recognition and NLP technologies. Google’s speech recognition API remains one of the most widely used platforms due to its high accuracy and multi-language support. Researchers have developed various assistants, but most focus on limited features. Very few combine multiple modules such as search, email automation, financial transactions, and ticket booking under a single system.

The literature also suggests a growing trend in voice commerce (v-commerce), where payments and purchases occur through voice commands. This project contributes to that domain by integrating UPI-based QR payment, which is an Indian financial standard widely used for fast peer-to-peer transactions.

Corresponding Author: Mayank Kumar, EIJO – JETIR, Volume – 10, Issue – 6, Page No. : 10 - 13

Speech Recognition Pipeline: Audio Capture → Noise Reduction → Google ASR → Text Output

System Architecture

The architecture consists of interlinked components such as the microphone interface, speech recognition engine, intent parser, command dispatcher, API handlers, and output modules. Each subsystem communicates seamlessly with others to provide real-time responses with minimal latency.

Key elements include

- Input Capture Layer
- Speech Recognition Engine
- NLP Intent Detection
- Processing Layer (Logic & Flow Control)
- External API Integrations
- Output Speech Layer
- UPI Payment and Ticket Booking Module

Integrated Assistant Modules: Search • Wikipedia • Email • Weather • Booking • Payment

Methodology

The assistant uses Google's automatic speech recognition (ASR) to convert the user's voice into text. Noise suppression and threshold calibration algorithms enhance capture accuracy. Once converted, the system matches user intent using keyword-based NLP matching. The methodology relies on lightweight logic trees rather than heavy AI models, ensuring maximum performance on low-end systems.

The system employs:

- Speech Recognition library for ASR
- gTTS for text-to-speech
- SMTP for Gmail-based email automation
- Weather API for real-time climate data
- Wikipedia API for instant summaries
- DuckDuckGo DDGS API for search results
- UPI payment link builder + QR generator

Email Automation Flow:

User Voice → Email Parser → SMTP Builder → Gmail Server → Delivery

Ticket Booking & UPI Payment System

The ticket booking system guides the user through movie selection, show time, theatre, location, and number of tickets. The assistant automatically calculates the total amount and generates a unique transaction identifier. This identifier is embedded into a UPI payment URL, which is then converted into a scannable QR code.

Users confirm payment using the keyword 'paid', after which the system stores the booking inside a structured JSON file. This enables offline storage of booking history and future ticket retrieval operations.

UPI Payment QR Generation:

Amount → UPI URL → QR Encoder → PNG File → User Scan

Data Storage

The system uses JSON-based data management for storing confirmed tickets. Each ticket includes:

- Ticket ID
- Movie Name
- Time & Location
- Price & Total Amount
- Payment Completion Flag
- Timestamp

Data Storage Model:

JSON Storage of Ticket Records with ID, Amount, Time

Results

The system produced highly accurate responses during testing. The speech recognition component successfully interpreted most commands even in moderate background noise. UPI QR codes were scanned successfully by major apps like Google Pay, PhonePe, and Paytm.

Discussion

The project demonstrates real-world feasibility of a low-cost AI assistant capable of complex tasks. The assistant behaves deterministically and avoids hallucination problems common in large language models.

Future Scope

Planned enhancements include:

- Full conversational chatbot integration
- Webcam-based face authentication
- Automatic UPI payment verification
- NLP-based semantic query handling
- Mobile application version

Conclusion

The research successfully demonstrates a feature-rich voice assistant combining search, automation, communication, booking, and payment processing. With further improvements, the system can evolve into a commercial-grade virtual assistant.

References

1. Google Speech Recognition API
2. Wikipedia Python Library
3. Open Weather API
4. DuckDuckGo Search API
5. Python SMTP Documentation
6. UPI QR Standards India