Personal Assistant Robots

Group 21

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Motivation and Goal

1

Fast Pace

People today must handle multiple tasks and information simultaneously.

2

App Switching

Frequent switching between apps (e.g., weather, search, budgeting) leads to wasted time and reduced productivity.

3

User Difficulty

Commuters, the elderly, or users who are not skilled with devices struggle with traditional input methods.

4

Need Integration

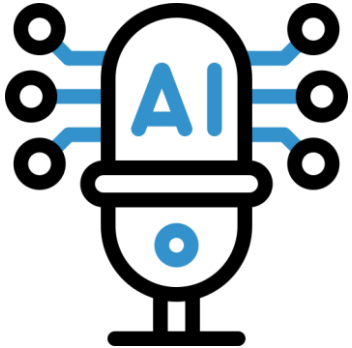
A more intuitive, unified, and intelligent system is required to simplify daily tasks.

Motivation and Goal

01
Integrated Assistant

Develop a personal assistant robot that combines multiple daily functions.

02
Voice-Centric Input



Use voice input as the main interaction method to reduce manual operations.

03
Instant and Intuitive Use

Provide a real-time, convenient, and intuitive user experience.

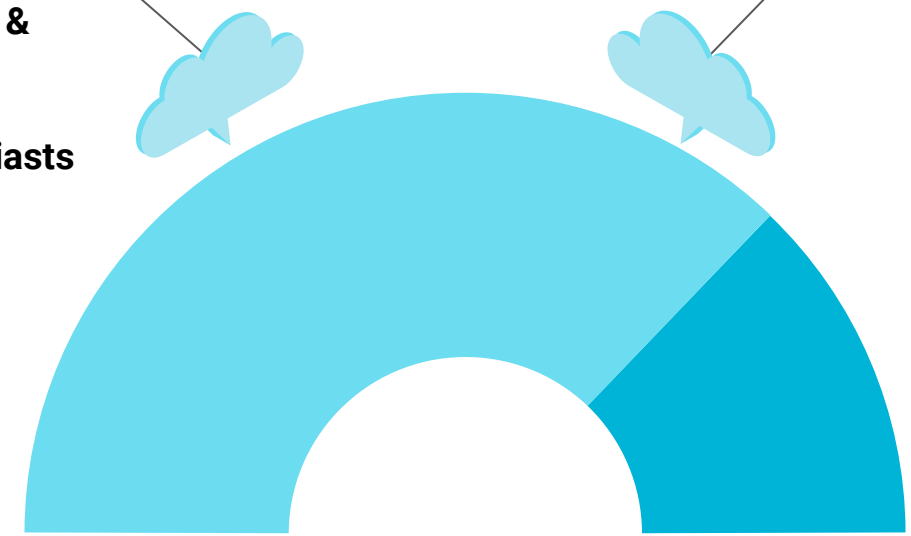
Related work

Category	Product	Key Features
Voice Input	**Translatotron**	Direct speech-to-speech translation; preserves tone & emotion.
Weather Forecast	**Open-Meteo**	Free, no API key; supports multiple global weather models.
Expense Tracking	**Moze**	Multi-device sync; AI voice/photo inputs; invoice integration.
AI Search	**ChatGPT**	Strong natural language understanding & generation.
	Gemini	Multimodal search with Google integration.
	Claude	Safe, structured responses; great for long-document tasks.

User

Primary Users

1. **Busy Professionals & Students**
2. **Technology Enthusiasts**



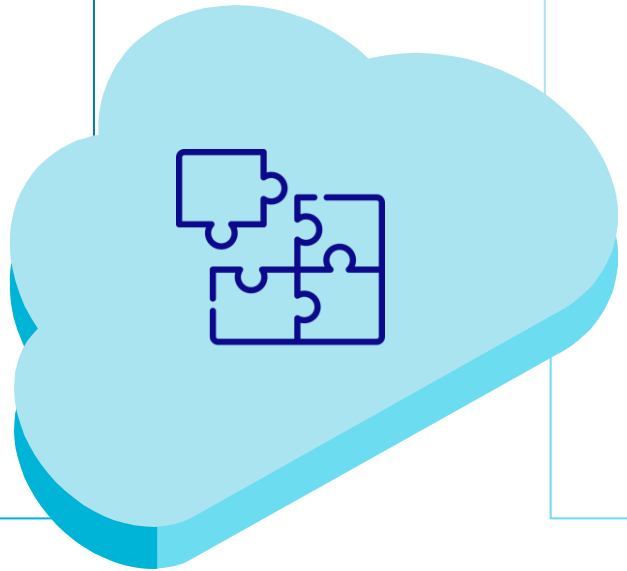
Secondary Users

1. **Seniors & Users with Limited Mobility**

Product features

Voice Input

Weather Forecast

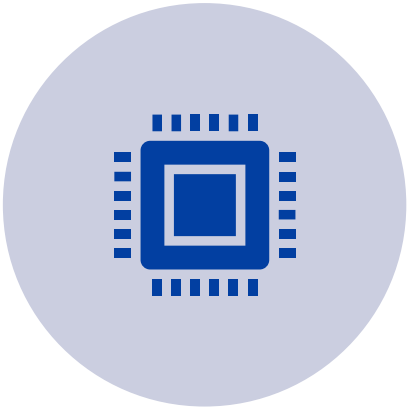


Expense Tracking

AI Search

Product features – Voice Input

Enables hands-free interaction; users can speak directly without holding their phone.



Built using Amazon Transcribe, which converts speech to text in real time before triggering AI responses.

Product features – Weather Forecast

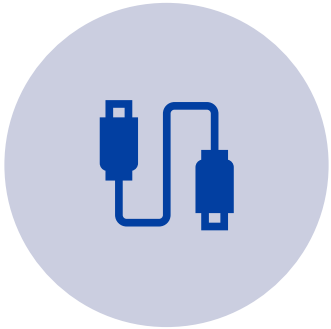
Users simply provide a location, and the system returns real-time data: temperature, feels-like temperature, humidity, wind speed, weather status, and a 3-day forecast.

Deployable on AWS Lambda + API Gateway, with automated daily updates via AWS EventBridge.

Product features – Expense Tracking

Users can record spending through natural speech (e.g., “I spent 200 dollars on lunch”).

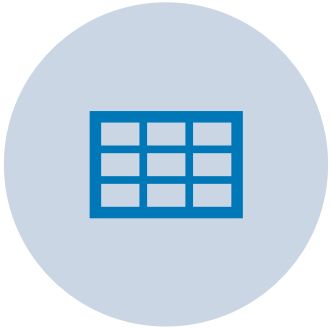
The system automatically identifies amount, category, and date, then logs it to a cloud-based ledger.



Data is stored in AWS DynamoDB or RDS, ensuring secure, cross-device synchronization across mobile, tablet, and desktop.

Product features – AI Search

Searches both public web data and internal document databases using semantic analysis for highly accurate results.



Integrates personal data (e.g., expense history, weather preferences) with external information for personalized insights.

NLU interprets user intent and converts it into search queries, retrieving relevant information and generating clear, meaningful responses.

The solution architecture