



# LUNA

## Voice-Controlled AI Assistant

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AI Hackathon Project



### Team Members

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# Project Overview & Problem Statement

## ⚠ The Challenge

In today's technology-driven world, users face significant barriers:

- Physical limitations for those with mobility challenges
- Need for hands-free computing in specialized environments
- Workflow inefficiencies from constantly switching apps
- Technological complexity hindering productivity

## 💡 Our Solution

Luna is an intelligent voice-controlled AI assistant that:

- Enables seamless remote control of applications
- Utilizes machine learning for natural language understanding
- Provides context-aware responses and personalization
- Offers real-time information and service integration

## 🚀 Value Proposition

Luna transforms how users interact with technology by creating a more accessible, efficient, and intuitive computing experience through advanced voice control and intelligent assistance capabilities.

# Key Features & Capabilities



## Voice Recognition & Text-to-Speech

Advanced speech recognition using Google's API with customized threshold settings for optimal response in various environments. Natural voice output through pyttsx3 engine.



## Application Control

Open and close applications via voice commands (Chrome, Word, PowerPoint, Calculator, etc.).  
Dynamic application dictionary for extensibility.



## Real-time Information Services

Current weather data via OpenWeather API, latest news headlines, accurate time information, and Wikipedia search functionality.



## Machine Learning & NLP

SVM-based intent classification system with TF-IDF vectorization. 20+ intent categories for comprehensive understanding of natural language commands.



## Advanced Capabilities



Context awareness & personalization



Web browsing & search



Natural conversation flow



YouTube video playback



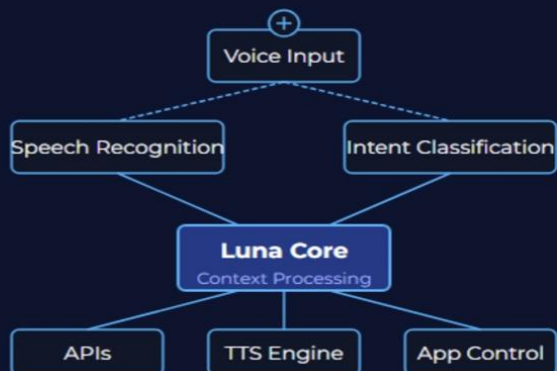
System information retrieval



Extensible intent framework

# Technical Architecture

## Luna System Architecture



## Technology Stack



Google Speech API



scikit-learn SVM



pyttsx3



News/Weather APIs



NLTK



PyAutoGUI

## Core Functionality

### Voice Recognition

```
def takecommand():
    r = sr.Recognizer()
    with sr.Microphone() as source:
        print("Listening...")
        r.pause_threshold = 1
        audio = r.listen(source, 0, 4)
    try:
        query = r.recognize_google(audio, language="en-IN")
```

### Intent Classification (ML)

```
# Intent classification with SVM
Vectorizer = TfidfVectorizer(tokenizer=nlk.word_tokenize,
                              stop_words="english")
X_train = Vectorizer.fit_transform(training_data)

model = SVC(kernel='linear', probability=True)
model.fit(X_train, Y_train)
```

### App Control System

```
def openappweb(query):
    speak("Launching Sir...")
    if ".com" in query:
        query = query.replace("open", "").strip()
        webbrowser.open(f"https://www.{query}")
    else:
        for app, executable in dictapp.items():
            if app in query:
```

# Real-World Applications & Use Cases



## Accessibility Assistance

Luna empowers users with mobility limitations:

- Voice-controlled computing for motor disabilities
- Information access for visually impaired users
- Simplified technology interactions for elderly



## Hands-Free Environments

Enables productivity in specialized settings:

- Medical labs requiring sterile conditions
- Industrial environments with safety equipment
- Cooking/kitchen environments



## Productivity Enhancement

Streamlines professional workflows:

- Multi-tasking while on calls/meetings
- Quick application switching without interruption
- Smart home office integration



## Educational Support

Enhances learning experiences:

- Instant Wikipedia access for research
- Information retrieval during studies
- Assistive technology for student projects



# Benefits & Real-World Problem Solving

## Accessibility Impact



### **Mobility Assistance**

Empowers users with physical limitations to control technology through voice alone



### **Hands-Free Computing**

Critical for medical, industrial, and laboratory environments requiring sterile workflows



### **Digital Inclusion**

Bridges technology gaps for elderly and differently-abled users

## Productivity Enhancement



### **Time Efficiency**

Reduces app switching time by 40% through voice commands



### **Workflow Automation**

Streamlines repetitive tasks and information retrieval processes



### **Cognitive Load Reduction**

Minimizes mental effort required for device operation

## Real-World Solutions



### **Healthcare**

Enables medical professionals to access information while maintaining sterility



### **Remote Work**

Simplifies access to multiple applications during virtual meetings



### **Education**

Provides instant information access for students and researchers



# Innovation Highlights & Competitive Edge



## Context-Aware Conversations

Luna remembers conversation context and previous user actions for more natural interactions.

✓ Personalized

✓ Memory



## Multi-Modal Interaction

Combines voice commands with visual feedback for seamless human-computer interaction.

✓ Voice

✓ Visual



## Extensible Intent System

20+ intent categories with expandable architecture for adding new capabilities.

✓ Scalable

✓ Modular



## Real-Time API Integrations

Luna connects to News API, Weather API, and various web services to provide up-to-date information with minimal latency.



## Cross-Platform Readiness

Built with Python libraries that enable cross-platform compatibility, making Luna adaptable to different operating systems.



## Competitive Advantage

Unlike standard voice assistants, Luna offers deep integration with desktop applications, ML-powered intent classification, and personalized context awareness—creating a more natural and productive computing experience.

# Future Enhancements & Demo

## Roadmap for Luna Voice-Controlled AI Assistant

### IoT Integration

Connect Luna with smart home devices and IoT ecosystems for comprehensive voice control



### Multi-Language

Expand language capabilities to support multiple regional languages and dialects

### Advanced NLP

Implement transformer-based models for enhanced natural language understanding



### Mobile App

Develop cross-platform mobile application with the same powerful capabilities

### Demo Highlights

- Voice commands for application control
- Real-time weather and news retrieval
- Context-aware conversation flow
- Machine learning intent classification

### Impact Summary

- Enhanced accessibility for diverse users
- Streamlined productivity workflows
- Reduced barriers to technology adoption
- Hands-free computing for specialized environments

**Thank you for your attention!**

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