

Final Year Project



Defense Proposal

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Abstract

The Personalized Work Assistant is a smart productivity system built specifically for workplace use, running continuously in the background to provide seamless support. It uses face recognition for authentication and natural conversation to set a professional tone, while monitoring user activity, applications, documents, and meetings to deliver proactive, context-aware suggestions. By integrating with calendars, communication platforms, and project management tools, it keeps tasks, emails, and notes organized, and provides an end-of-day report highlighting completed and pending work. Unlike general assistants such as Alexa or Siri, it focuses solely on professional needs, acting as a digital colleague that not only executes commands but also anticipates requirements, adapts to individual working styles, and streamlines workflows to reduce cognitive load and enhance efficiency.

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1. Introduction

The Personalized Work Assistant is a smart, work-exclusive system designed to act as a digital colleague. It authenticates the user through face recognition, operates in ambient mode to monitor activities, and provides context-aware, proactive support. Through natural voice and text interaction, it manages tasks, integrates with calendars, tracks meetings, and maintains a knowledge base of work-related details. At the end of each day, it delivers a structured briefing of achievements and pending tasks, ensuring clarity and productivity. By focusing solely on professional needs, it offers a unique, proactive, and personalized approach to daily work management. The Personalized Work Assistant also adapts to individual work styles, learning from user habits to refine its recommendations over time. Its seamless integration with workplace tools ensures streamlined workflows, while its proactive insights help users stay ahead of deadlines and priorities.

1.1. Problem Statement

Professionals rely on various tools like calendars, task managers, messaging apps, and meeting platforms, but these often work in isolation without intelligent integration. General purpose assistants such as Alexa, Siri, and Google Assistant are reactive and casual, lacking the ability to function as proactive, work focused companions. This gap leads to wasted time switching between applications, difficulty tracking progress, and higher cognitive load. To address this, there is a need for a personalized assistant that runs in the background, understands user context, provides real time support, and delivers end-of-day summaries, acting as a true digital colleague rather than just a tool.

1.2. Objectives

- Develop a personalized AI assistant that authenticates users with face recognition and supports professional tasks through continuous background operation.
- Implement context monitoring and natural interaction modules to detect activities, enable conversations, and provide proactive suggestions.
- Maintain a knowledge base to store updates, notes, and project details for easy retrieval.
- Integrate task and schedule management with calendars to track meetings, deadlines, and ongoing work.
- Deliver daily briefings summarizing completed tasks, pending items, and upcoming responsibilities, offering a focused, work-only solution.

2. Motivation

Modern professionals face increasing challenges in managing their daily workload effectively. Meetings, tasks, documents, and communications are scattered across multiple platforms, requiring constant attention and manual coordination. This fragmentation reduces focus, wastes valuable time, and creates unnecessary stress. The motivation behind this project is to create an assistant that eliminates this gap by acting as a personalized digital colleague. Instead of merely responding to commands, the assistant continuously operates in the background, understands the user's context, and proactively offers support. By summarizing meetings, tracking tasks, and delivering an end-of-day briefing, it ensures that no important details are overlooked. This project aspires to shift the role of an assistant from being a passive tool to becoming an active, intelligent partner in productivity, providing professionals with clarity, efficiency, and confidence in their daily work.

3. Overview

The Personalized Work Assistant is an intelligent system built to act as a work-exclusive companion in a smart environment. Running continuously in the background, it authenticates users through facial recognition, engages in natural interaction, and monitors ongoing activities to provide context-aware support. Unlike traditional tools that depend on manual input, this assistant anticipates needs and offers proactive suggestions to improve efficiency and focus. Its core modules include ambient context monitoring, natural conversation, task and schedule management, proactive assistance, and end-of-day briefing. In addition, it offers a dedicated output module, a user-friendly frontend, and an interactive dashboard to present tasks, meetings, and productivity insights in real time. Together, these features turn the assistant into a true digital colleague that not only responds to commands but also streamlines workflows, organizes responsibilities, and ensures every workday is structured, efficient, and highly productive.

4. Functionality

The Personalized Work Assistant is designed to function as an intelligent workplace companion by combining advanced AI capabilities with seamless integration into daily workflows. Its core functionalities ensure secure access, real-time context awareness, natural interaction, and proactive

assistance, all tailored to enhance productivity and reduce cognitive load. The following are the key features of the system:

4.1 Secure User Authentication

The assistant authenticates the user through face recognition, ensuring personalized and secure access. This allows the system to greet each user individually and initiate tailored interactions.

4.2 Context-Aware Monitoring

Running continuously in the background, the assistant observes active applications, documents, and meetings to stay context-aware and provide relevant, timely support.

4.3 Conversational Interaction

A natural conversation module enables human-like communication. Users can issue commands, request updates, or engage in dialogue, while the assistant responds intelligently in both proactive and reactive modes.

4.4 Knowledge Management

The system maintains a structured repository of notes, meeting details, updates, and project information, ensuring that important context is preserved and easily retrievable.

4.5 Proactive Assistance

Based on user activity, the assistant offers context-driven suggestions, such as summarizing documents, preparing meeting notes, or organizing tasks, ensuring users remain focused on priorities and never miss important events.

4.6 Task and Schedule Integration

By connecting calendars and reminders, the assistant manages deadlines, meetings, and tasks, ensuring users remain focused on priorities and never miss important events.

4.7 Daily Briefing

At the end of each workday, the system generates a concise summary of completed tasks, meetings attended and pending items, providing clarity on achievements and next steps.

5. Tools and Technologies

5.1. Python

Python is a versatile, high-level programming language used to build everything from simple scripts to complex applications. It emphasizes readability, productivity, and a huge ecosystem of libraries, making it ideal for web development, data science, artificial intelligence, automation, and backend services.



5.2. N8n

n8n is a workflow automation tool that lets you connect apps, APIs, and databases with ease. It provides a no-code/low-code editor for building powerful automation pipelines and custom integrations.



5.3 React

React is a JavaScript library developed by Facebook for building fast, interactive, and component-based user interfaces. It efficiently updates and renders UI using a virtual DOM, making web apps more dynamic and scalable.



5.4 SQLite/Chroma DB

SQLite is a lightweight, self-contained, serverless database engine widely used for mobile, desktop, and small-scale applications. It stores data in a single file and requires minimal setup, making it fast and easy to use.



5.5 Visual Studio Code

Visual Studio Code (VS Code) is the primary Integrated Development Environment (IDE) used to develop Devora. It provides a modern and extensible environment with support for multiple programming languages, GitHub integration, and Docker extensions. VS Code helps the development team manage both frontend and backend codebases efficiently.



6. Required hardware and Software resources

6.1. Hardware

Table 1: Hardware

Hardware	Specifications
Development PC	Microsoft Windows 10/11 (64-bit) or Ubuntu 20.04+ 8 GB RAM recommended 500 GB storage Stable internet connection

6.2. Software

Table 2: Software

Software	Purpose
Visual Studio Code	Default IDE
Git & GitHub	Version control, repository management, and GitHub Actions integration

7. High Level Diagram

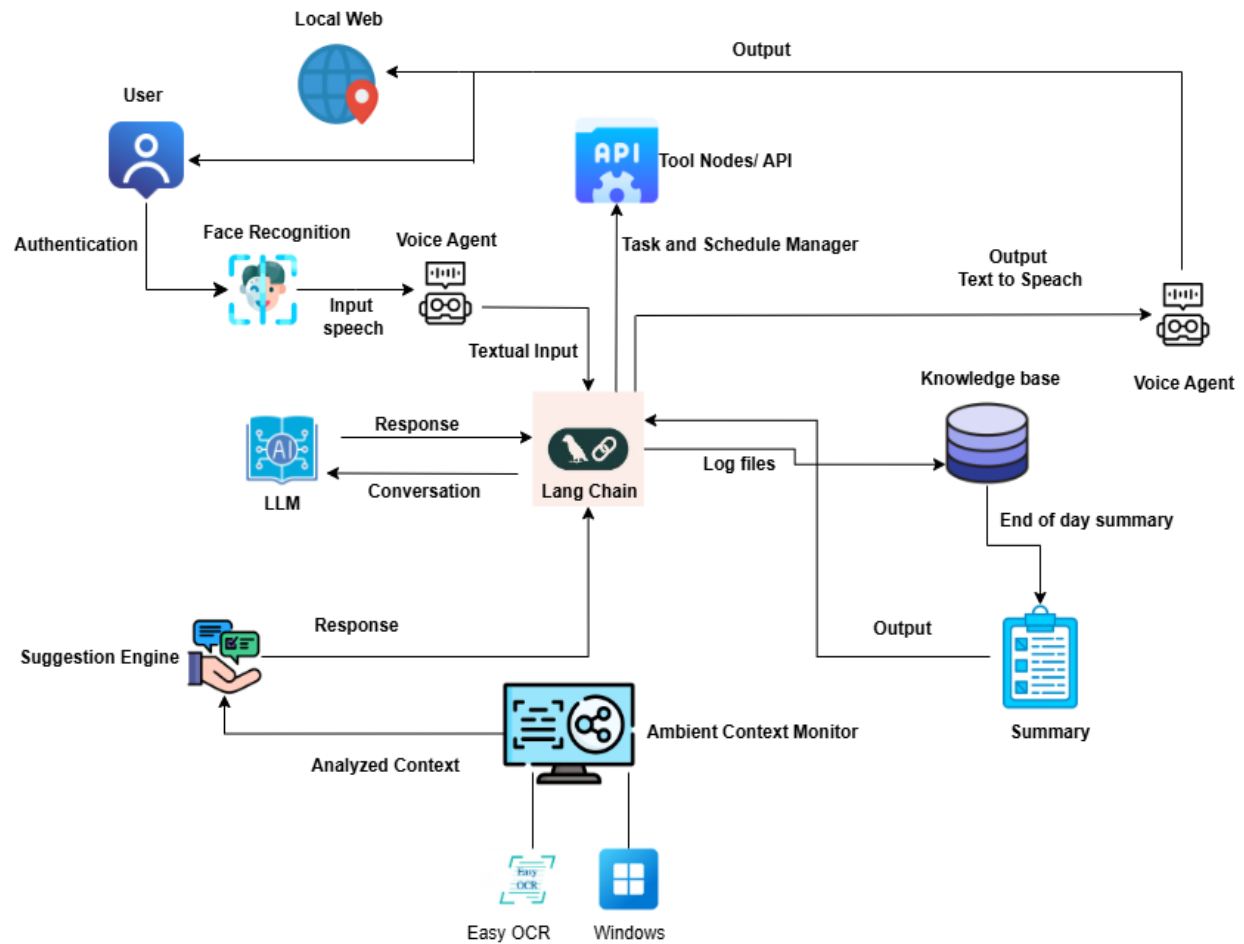


Figure 1: High Level Diagram

8. Timeline



Figure 2: Timeline

9. References

- <https://youtu.be/vvimBPJ3XGQ?si=fvbXHIGwo9HNI3Lm>
- <https://youtu.be/rt1dBr2Jz78?si=vwedc25y3qFZmZl7>
- <https://en.wikipedia.org/wiki/CALO>
- <https://cora.ucc.ie/items/26e0f2c1-1b89-4710-9e15-834a97b4baf9>