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AI Voice-Bot

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Abstract: *In this paper, we present an AI-based desktop voice assistant built with Electron, that provides a natural conversation experience with integrated system-control capabilities on Windows OS. It listens to them, thanks to Wit, which processes your voice and text inputs. ai to transcribe the audio into reliable speech-to-text output and the Gemini AI API to respond in a coherent and context-appropriate manner. In addition to the conversational component, the system also boasts a new feature set enabling the user to control a variety of PC functions (like enabling/disabling WiFi, controlling the screen brightness & toggling the Bluetooth, etc.) via IPC handlers and native Windows commands. It is a modular architecture, owning separate pieces of code for authenticating users, processing the voice, making API calls and executing commands on the Machine. A secure authentication module to interact with a MySQL database to manage user credentials, while continuing voice recording pipelines with audio transformation routines ensures speech recognition high fidelity. Our empirical evaluations show that the combination of diverse APIs and system controls present a real-time and dynamic user experience, overcoming the hurdles of not synchronizing asynchronous interfaces. In the future, our focus will be on reducing the latency, improving the control of the system and the security protocols, which will make this more similar to desk assistants.*

Keywords: AI Voice Assistant, Electron desktop application, speech-to-text conversion, system control automation, Gemini AI API, Wit. Some of them are: ai Integration, Inter-Process Communication, User Authentication