

Speech-Driven AI Assistant Using Hidden Markov Model

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Abstract: *The rapid development of Artificial Intelligence and Natural Language Processing has enabled the creation of intelligent virtual assistants capable of performing tasks through voice interaction. This research paper presents the design and development of a JARVIS (Just A Rather Very Intelligent System) based voice assistant that can interact with users, execute commands, and provide useful information in real time. The system uses speech recognition to convert voice commands into text and text-to-speech technology to respond verbally, creating a natural and interactive communication environment. The assistant can perform various operations such as opening applications, searching the internet, providing weather information, and answering general knowledge queries.*

The proposed system is developed using Python and integrates multiple technologies such as speech recognition libraries, APIs for real-time data retrieval, and automation tools to control computer functions. The objective of the project is to build an efficient, user-friendly virtual assistant that simplifies daily computer operations through voice commands. The system also aims to demonstrate how AI-based assistants can improve productivity and human-computer interaction. Experimental results show that the assistant performs tasks accurately and provides a responsive voice-based interface, making it a practical solution for personal digital assistance.

Keywords: Artificial Intelligence (AI), Virtual Assistant, JARVIS, Speech Recognition, Natural Language Processing (NLP), Voice Command System, Python Automation

