

Development and Evaluation of a Personal AI Assistant using Python and Natural Language Processing

Piyush Krushnarao Ninawe¹, Aditya Lavhale², Diksha Fulzele³

Final Year Student, Department of Computer Science and Engineering¹

Assistant Professor, Department of Computer Science and Engineering^{2,3}

Tulsiramji Gaikwad Patil College of Engineering and Technology, Nagpur, Maharashtra, India

Abstract: *This research paper focuses on the development of a Personal AI Assistant using Python and Natural Language Processing (NLP). The goal of this assistant is to help users perform everyday tasks by using voice commands. Some of its main features include talking to users, checking the weather, setting reminders, opening websites, and searching online. It can also detect objects using a camera and generate images using AI based on what the user asks.*

The assistant uses different technologies and APIs such as OpenWeather for weather updates, Google Search for finding information, and text-to-speech tools to talk back to the user. All parts of the assistant were built separately (in modules) and tested to ensure they work well together.

The system is designed to understand and respond in real-time, making it feel more interactive. During testing, it showed high accuracy in understanding commands and completing tasks quickly.

However, there are some limitations like it sometimes struggles to understand voice commands in noisy environments, and some online services have limits on how often they can be used.

In the future, this assistant can be improved by adding memory to remember past conversations, working without internet, and even controlling smart devices at home. This project proves that AI can make everyday computer use smarter and more helpful for everyone.

Keywords: AI Assistant, Python, NLP, Voice Recognition, Task Automation, Object Detection, Image Generation

