

Senior Digital Assistant

Motivation

Empowering elderly individuals with effective communication tools during emergencies is crucial for their safety and well-being. Developing a digital assistant using natural language processing will enhance their independence and ensure timely assistance when needed.



Problem statement

Elderly individuals often struggle to manage emergencies due to a lack of effective communication tools. Existing emergency alert systems are not designed to meet the unique needs of seniors, leading to delays in assistance during critical situations.

This project aims to develop a digital assistant that utilizes natural language processing (NLP) to enable elderly users to issue voice commands for emergency help. The system will understand urgent requests and facilitate communication with caregivers and emergency services.

By leveraging NLP techniques such as speech recognition, intent detection, and context awareness, the assistant will enhance the ability of seniors to seek help during emergencies, improving their safety and overall well-being.

Proposed Pipeline

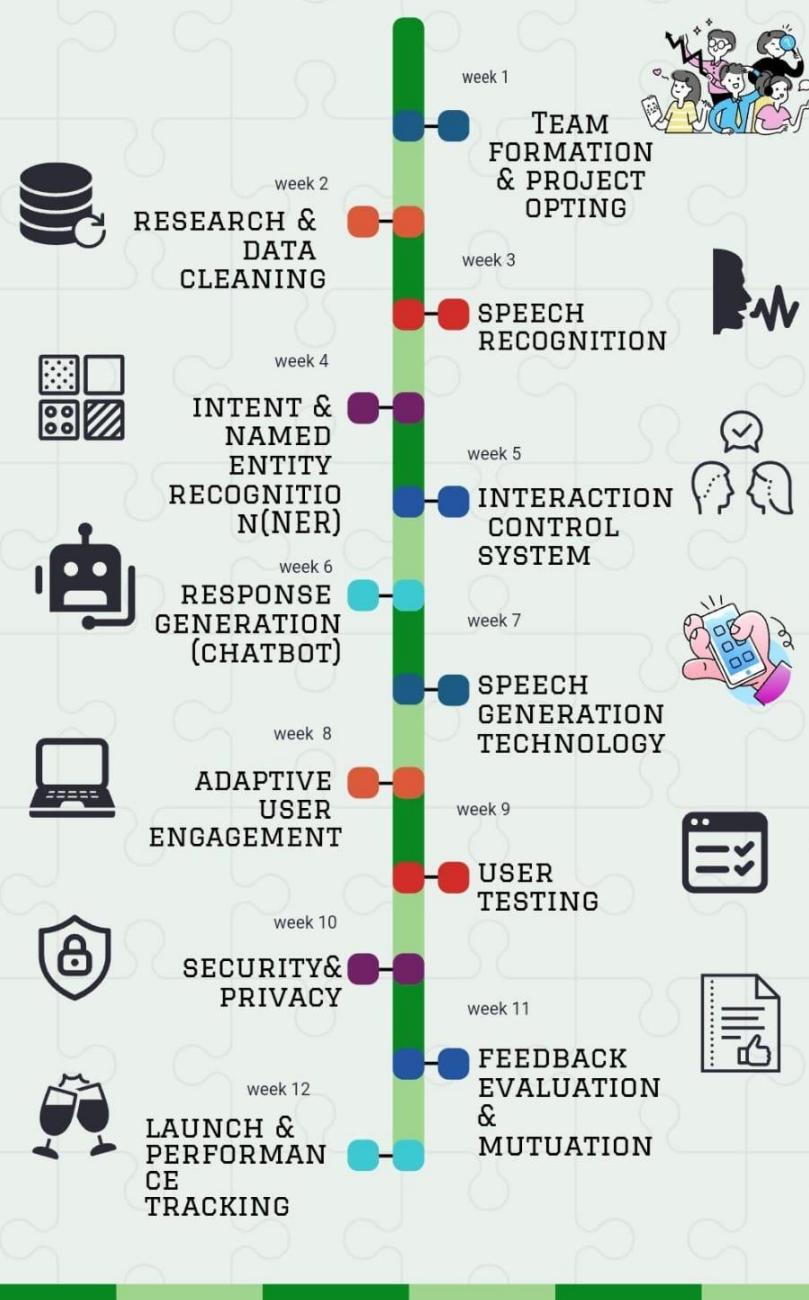
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PIPELINE

The pipeline outlines the development of an NLP-based digital assistant for elderly users, covering data preparation, speech processing, intent detection, conversation management, and response generation, with a focus on personalization and ongoing monitoring.



Timeline



Timeline

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Phase	Task Description	Duration	Completion Date
Phase 1: Research & Planning	Identify user needs, NLP tools, and emergency use cases.	2 weeks	October 1, 2024
Phase 2: Dataset Collection	Gather emergency-related datasets (elderly focus).	2 weeks	October 15, 2024
Phase 3: NLP Model Development	Develop models for Speech Recognition, NLU, and TTS.	4 weeks	November 15, 2024
Phase 4: System Integration	Integrate NLP models with emergency alert system features.	2 weeks	November 30, 2024

Expected Outcome

Develop a voice-enabled Natural Language Processing (NLP) system that serves as a personalized digital assistant for senior citizens. The system should accurately understand and process natural language queries and commands spoken by elderly users, considering challenges such as varying speech patterns, accents, and potential speech impairments..



- Expected NLP Outcomes of the project:High-accuracy speech recognition and intent detection for health-related commands, medication management, and daily task scheduling.
- Context-aware dialogue management enabling natural and coherent multi-turn conversations to reduce social isolation.
- Effective slot filling and named entity recognition (NER) to support cognitive functions like reminders and memory assistance. Real-time emergency intent detection through phrase and sentiment analysis, triggering appropriate responses.
- Robust automatic speech recognition (ASR) tailored to age-related speech variations, ensuring seamless task execution and personalized assistance.