# Sound Wave Scribe Voice Assistant

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## INTRODUCTION

The Sound Wave Scribe Voice Assistant revolutionizes human-computer interaction with advanced NLP and ML techniques, creating a proactive, conversational interface. Grounded in cutting-edge research, it understands complex language nuances and adapts through iterative learning. Equipped with robust privacy measures, its intuitive, customizable interface ensures accessibility for users of all levels. Developed iteratively with user feedback, it aims to exceed expectations in usability and innovation..

## OVERVIEW

The dataset contains images of X-rays. Our Original dataset consists of 372 normal images and 372 Osteo images. We performed image augmentation for each image file where it takes one image as input and generates augmented versions of each image. After performing all these techniques the augmented data consists of 1860 Normal images and 1860 Osteo images.

## PROBLEM STATEMENT

Existing voice assistants lack sophistication in understanding context, maintaining conversation flow, and adapting to user preferences. Users experience frustration due to rigid command structures, limited natural language processing, and inconsistent performance. There is a pressing need for voice assistants to evolve to meet user expectations for seamless, intuitive interaction

## OBJECTIVES

Assess the current state of voice assistants, identifying their strengths and limitations.Highlight challenges such as context understanding, adaptability, and rigid command structures.Discuss the importance of natural language processing (NLP) and its impact on user experience. Emphasize the need for improvements in voice assistant sophistication and interaction capabilities.

## MODELS USED

Audio Capture: Records raw audio input, Preprocessing: Filters noise and extracts features, ASR: Converts audio to text, NLP: Tokenizes, tags, recognizes entities, and analyzes sentiment, NLU: Determines intent, Dialog Management: Maintains context, Knowledge Graphs: Provides structured information, NLG: Generates coherent responses, TTS: Converts text to speech.
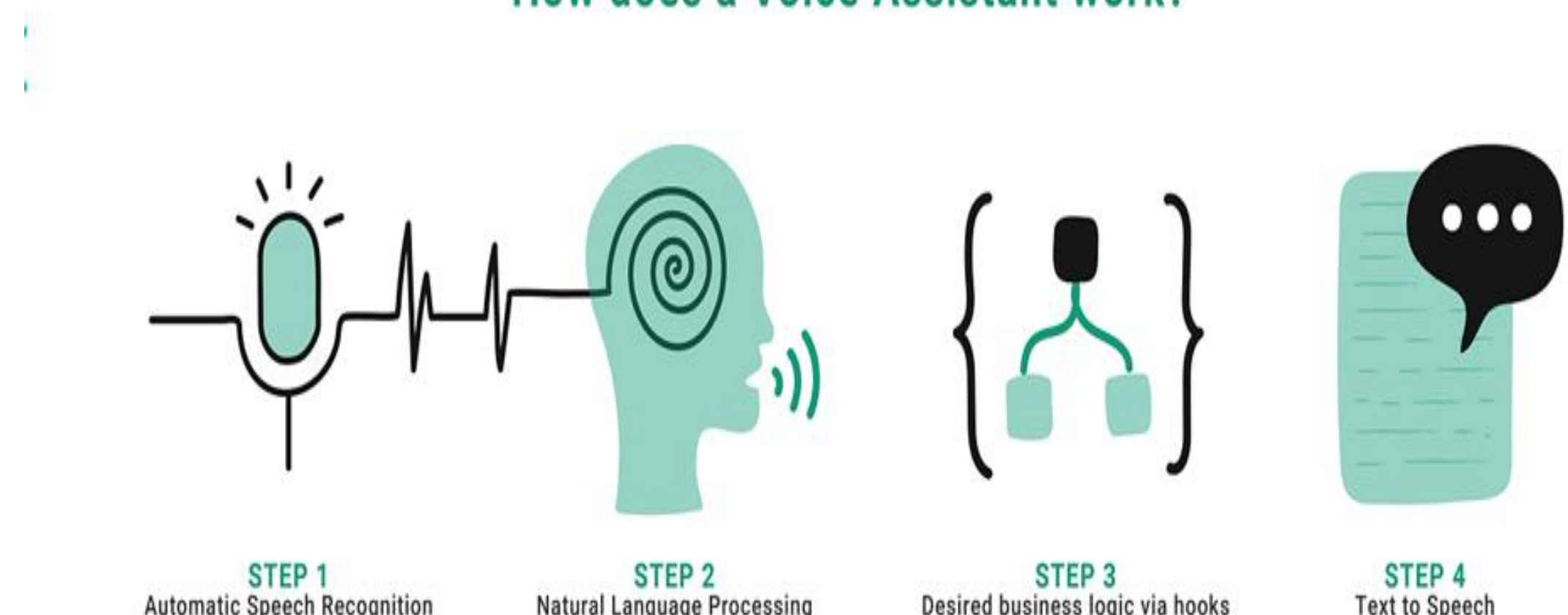


Timing chart
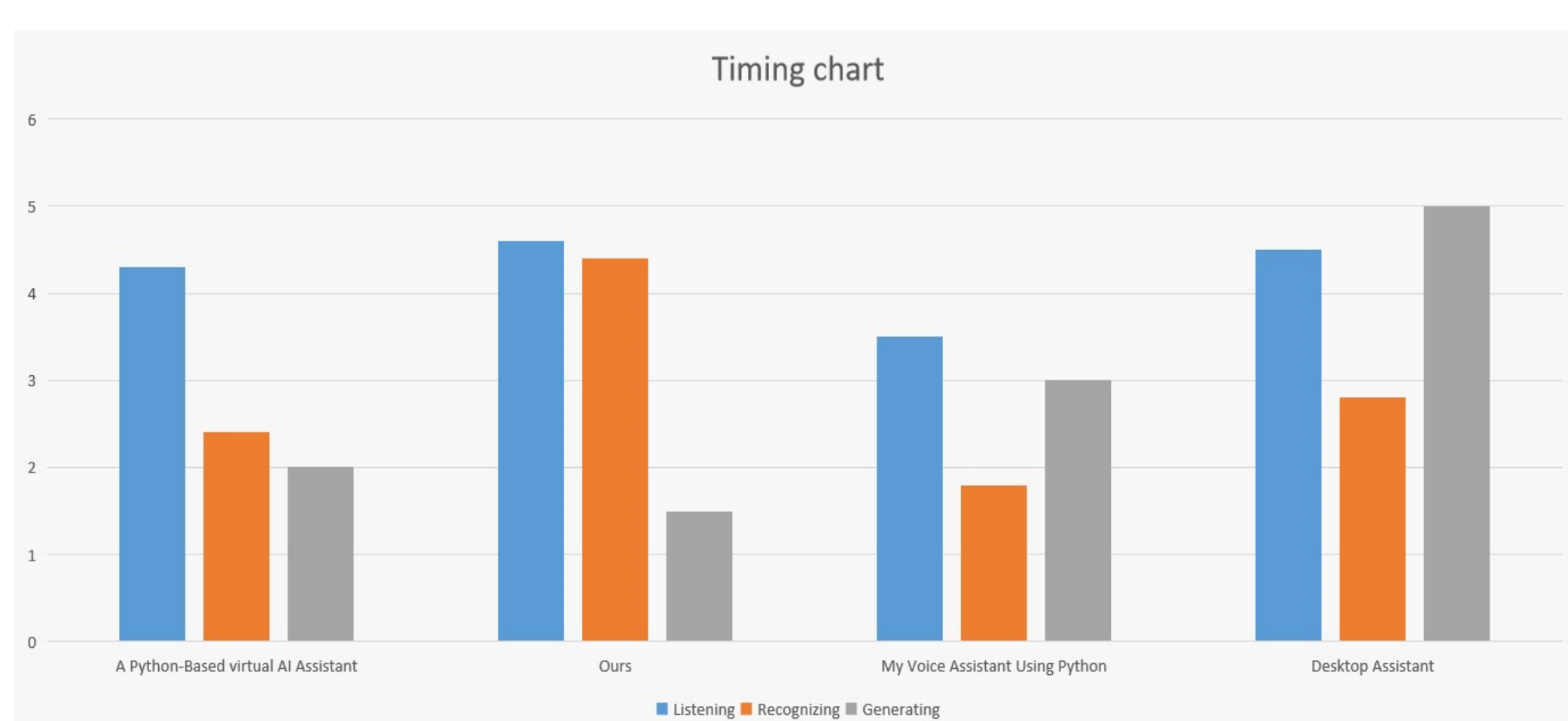
## LIMITATIONS

Research has shown that while voice assistants excel at straightforward tasks, they struggle with context, multi-turn conversations, and nuanced queries. Users encounter frustration when their requests fall outside the predefined scope. These limitations stem from the reliance on rigid command structures and the challenge of processing natural language.

## PROPOSED METHODOLOGY

Develop a revolutionary voice assistant by integrating advanced NLP and ML techniques. Capture audio, preprocess with noise reduction and feature extraction, transcribe with ASR, analyze using NLP modules for understanding, manage dialog flow, leverage knowledge graphs for accuracy, generate human-like responses with NLG, and synthesize speech with TTS.



How does a Voice Assistant work?

STEP 1 Automatic Speech Recognition

STEP 2 Natural Language Processing

STEP 3 Desired business logic via hooks

STEP 4 Text to Speech

## CONCLUSION

The Sound Wave Scribe Voice Assistant project signifies a notable advancement in voice-controlled technology. Despite its strengths in architecture and user-centric design, addressing challenges like complex interactions and reliance on external services remains crucial. Continuous research is imperative for its evolution and alignment with user expectations.

## REFERENCES

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