Filière Informatique de gestion
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Automated Chatbot Using Speech-to-Text and Text-to-Speech with Mobile App Integration

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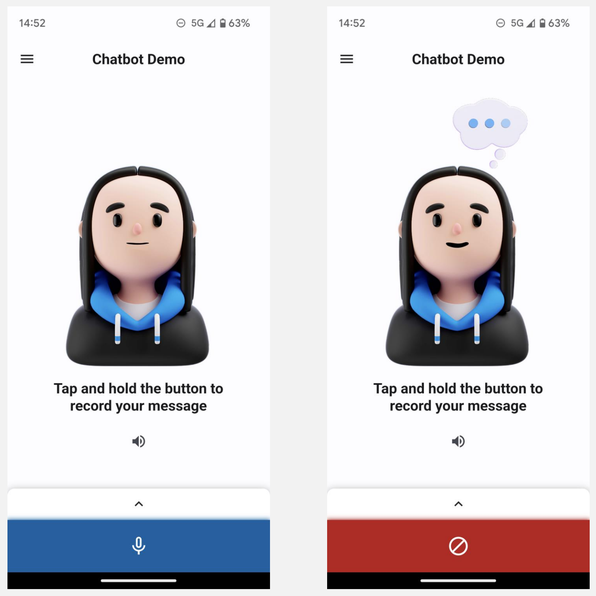
Summary
The goal is to develop an automated chatbot that allows users to interact through voice input and receive voice output. By integrating the latest speech-to-text (STT) and text-to-speech (TTS) technologies into a mobile app, comfort and accessibility are improved.

Introduction

Methods
- Theoretical foundations and current state of research.
- Comparison of STT and TTS APIs:
  - Criteria considered in the STT-API analysis:
    - Accuracy, Speed, Costs and Quality of documentation
  - Criteria considered in the TTS-API analysis:
    - Quality of speech output, Configuration options, language scope, Speed and Costs
- Identification of the most appropriate technologies for the chatbot.
- Implementation and integration of the chatbot into a mobile application.
- Presentation of user testing results.
- Possible approaches for future developments.

Results
- STT API selection: **OpenAI Whisper**
  Why?
  consistent performance and high accuracy
- TTS API selection: **Microsoft Azure TTS**
  Why?
  consistent results and the advantage of generating matching Visemes, which are visual representations of phonemes used in lip-syncing and facial animation.



Technologies

Flutter
OpenAI
Azure

Conclusions
- The mobile application with the integration of the various STT and TTS APIs was **successful implemented**
- The **human factor is critical** when developing and integrating a chatbot into a mobile application, putting the needs and experiences of users first. By actively incorporating user feedback and preferences, a human-centric approach can create a chatbot that improves the interaction of the mobile application and positively changes the way users interact with technology.

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