

# Senior Design Team 14



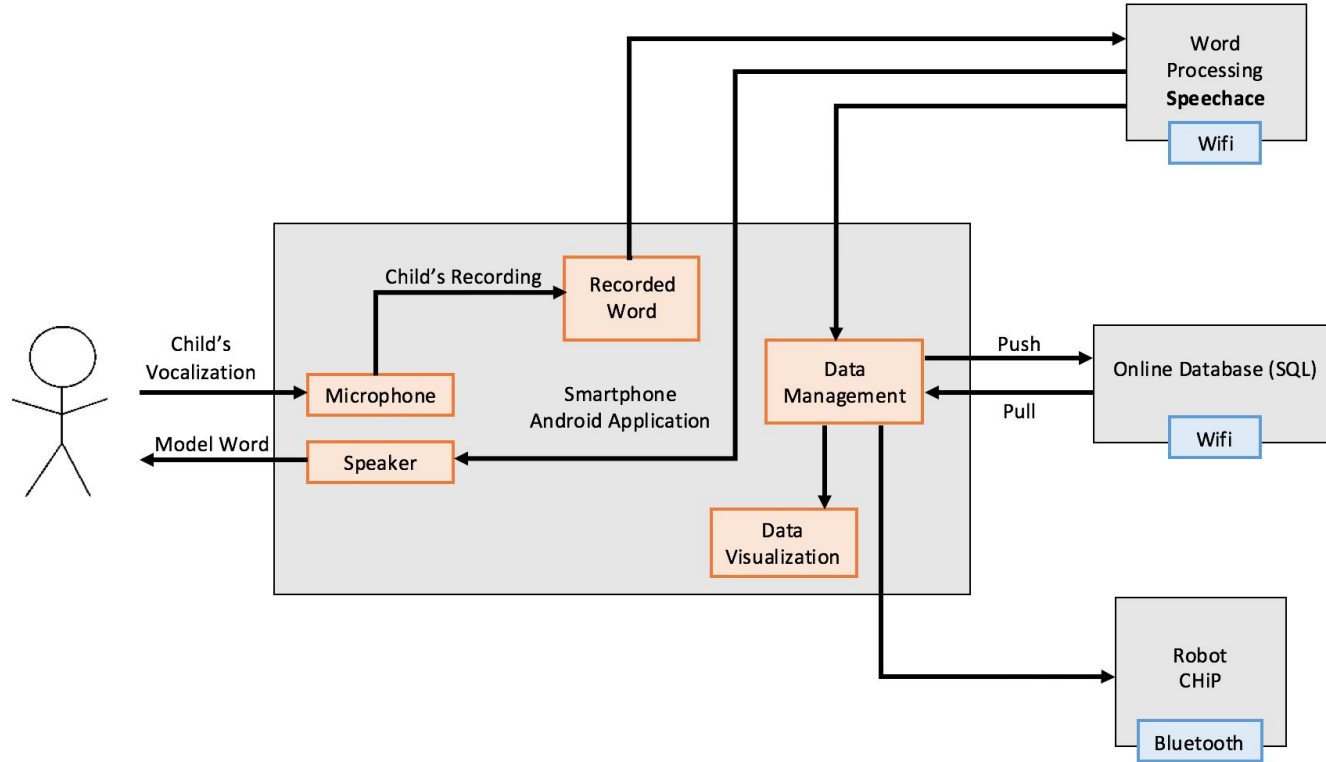
Arley Trujillo, Laura Salinas,  
Priya Kapadia, Shivani Bhatia,  
Steven Graham

# Problem Statement

- 1 in 68 children is affected by Autism Spectrum Disorder (ASD)
- $\frac{2}{3}$  of children with ASD grow up to have significant cognitive and social impairment, along with difficulty acquiring new adaptive behaviours
- 30-40% of children with ASD remain nonverbal
- There is a shortage of ASD-trained personnel
- High cost of speech therapists

Speech therapy package assisting children with Autism Spectrum Disorder in developing their communication skills in a cost efficient, adaptive, and fun manner.

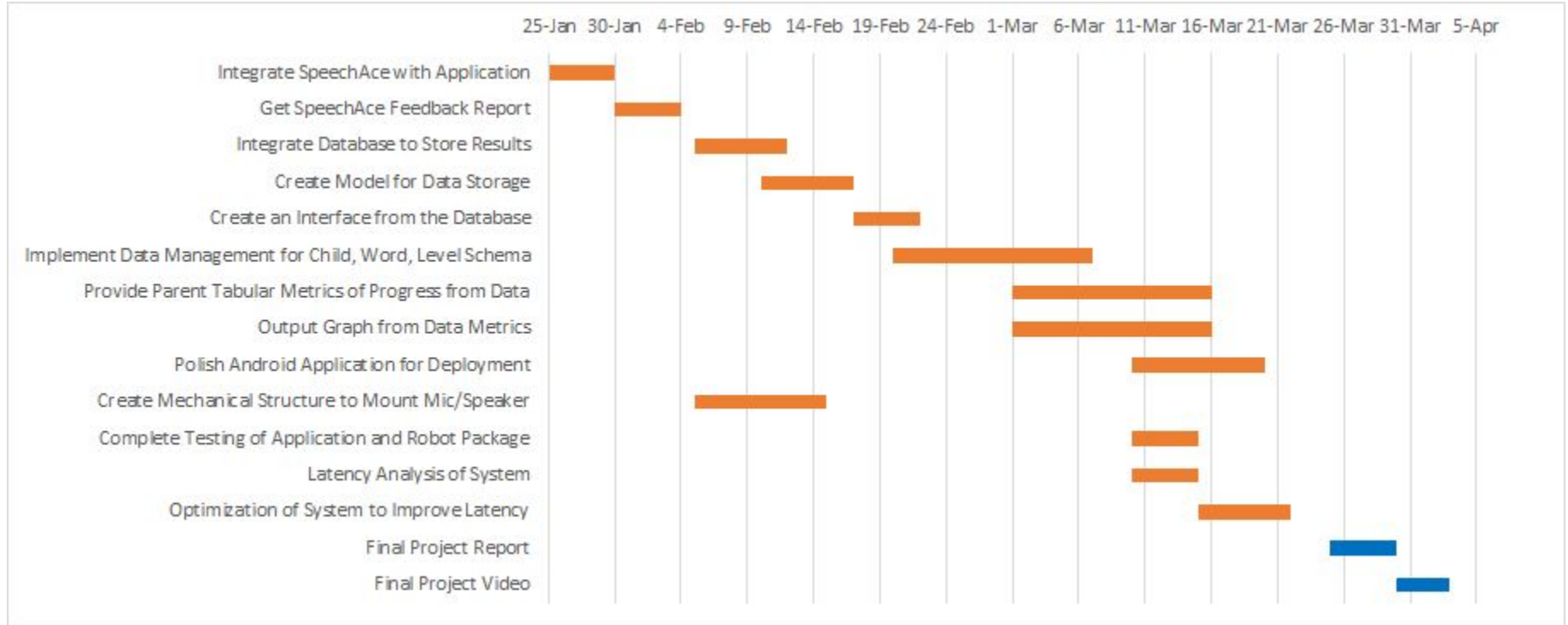
# Pipeline Flowchart



# Completed to Date

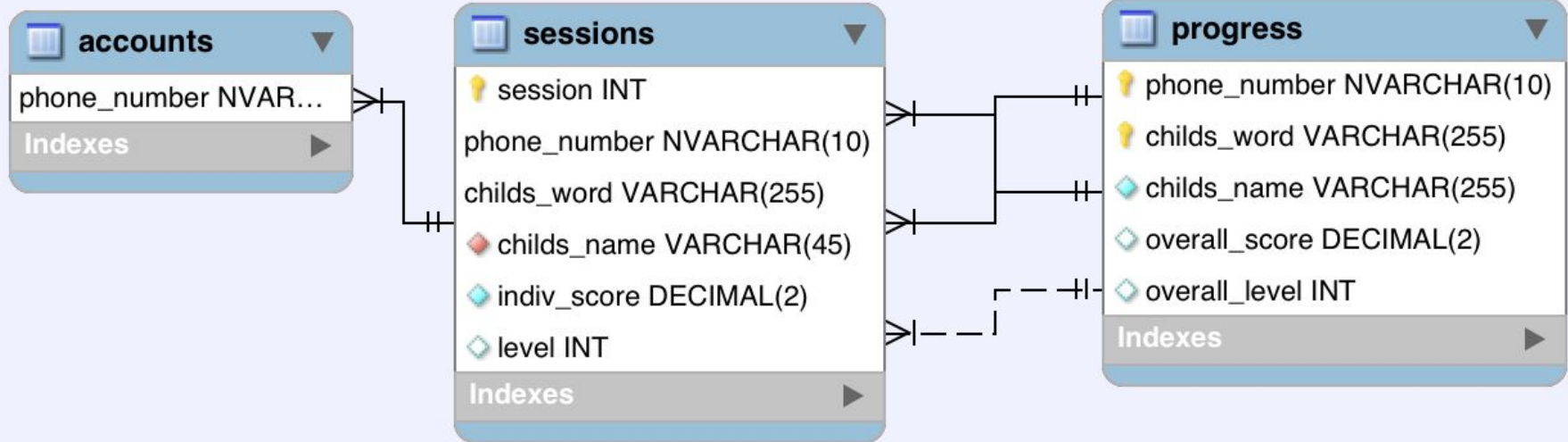
- Full system pipeline
  - Created Android application to interface with CHiP robot
  - Using Speechace to generate text-to-speech audio file for user word modeling
  - Saving user audio vocalization attempts locally before processing
  - Using Speechace with Android application to score vocalizations
  - Using similarity score to provide reward action from robot
  - Created and integrated database with Android application

# Progress vs Gantt

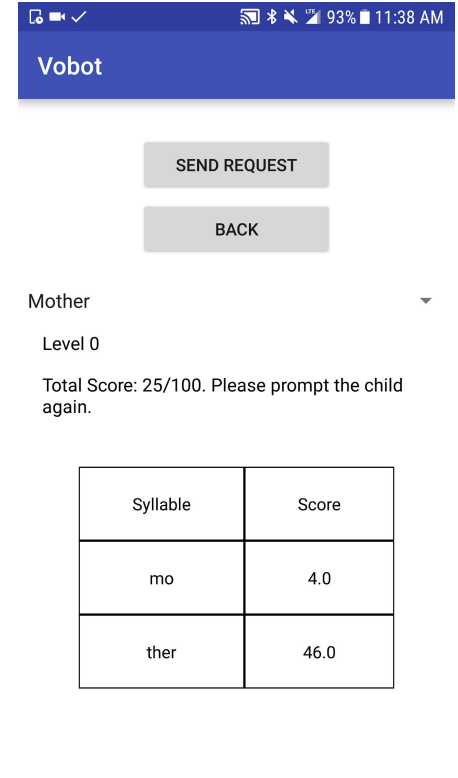
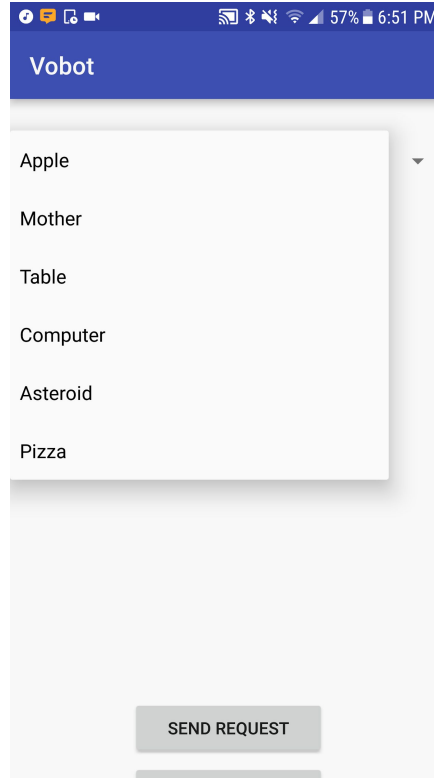
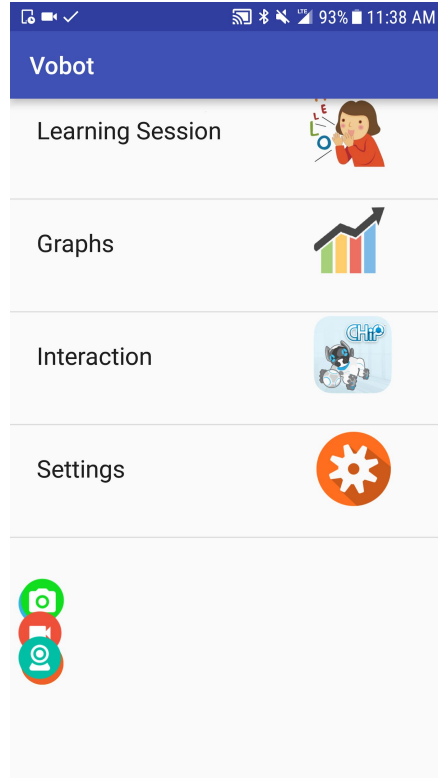
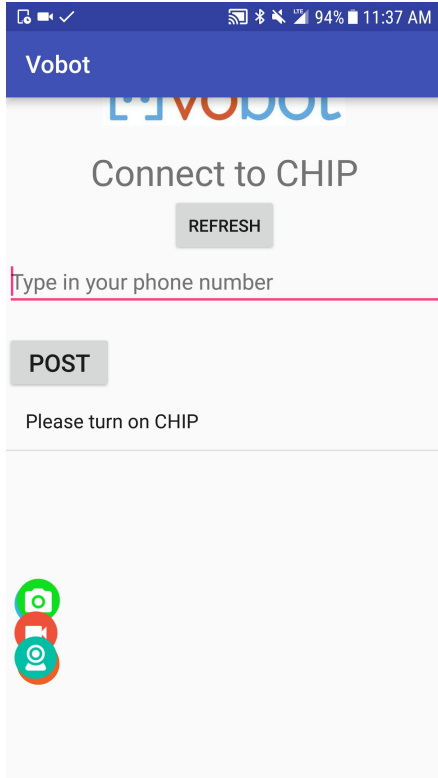


# Database

## Vobot Database Structure

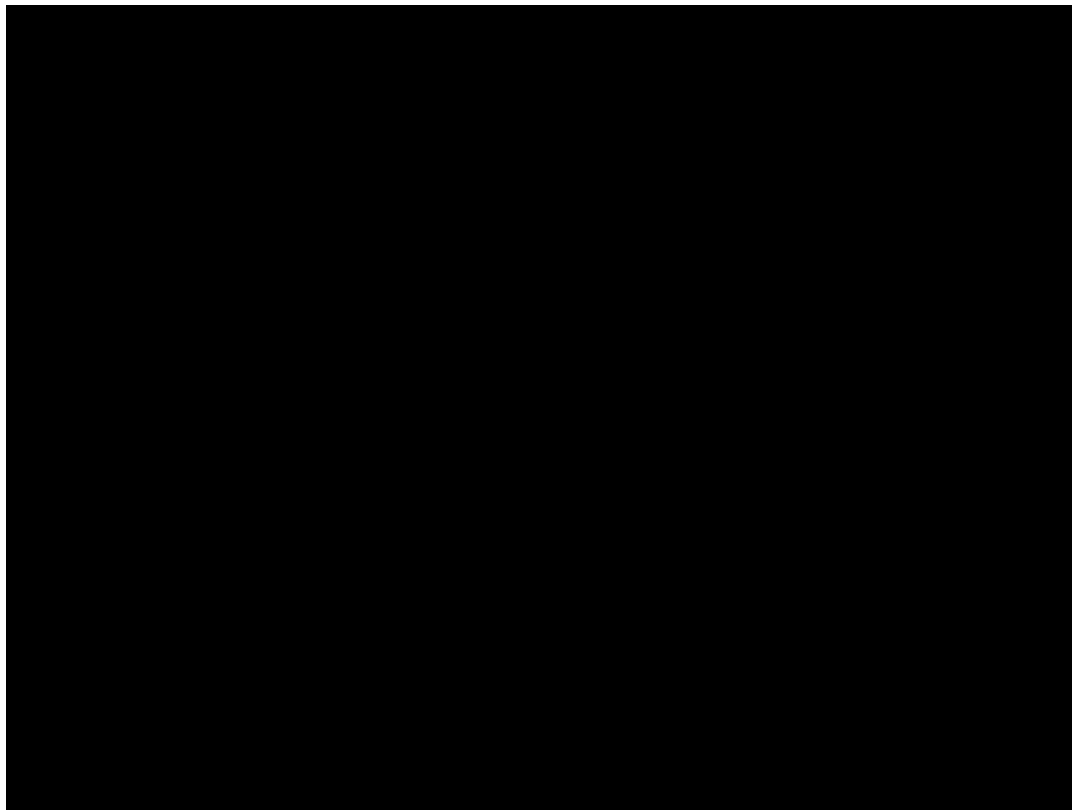


# Android Application





# Video Demo



# Design Freeze

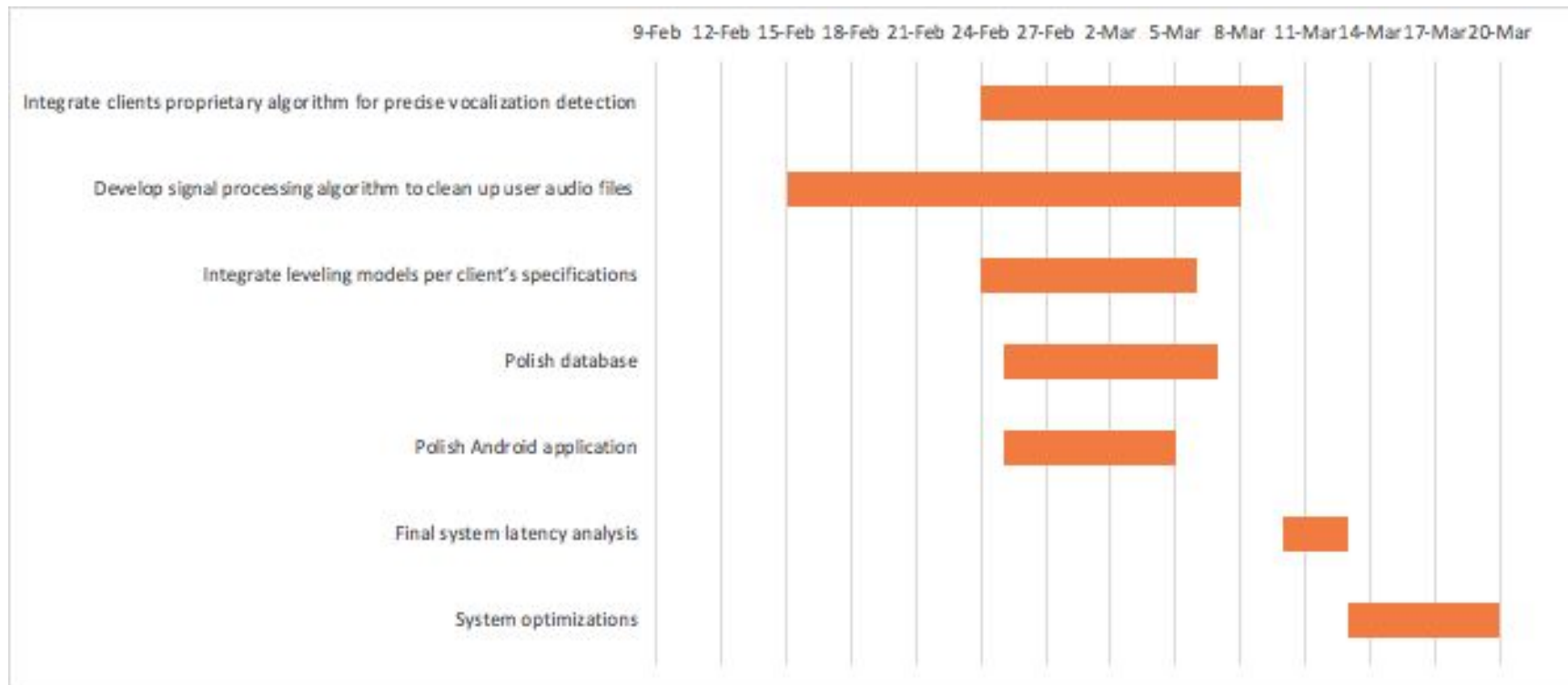
- Robot model (CHiP)
- Similarity score algorithm (Speechace)
- Database (Amazon MySQL)
- Microphone (Cellphone)



# Remains to Be Done

- Integrate clients proprietary algorithm for precise vocalization detection
- Develop signal processing algorithm to clean up user audio files
- Integrate leveling models per client's specifications
- Optimize database
- Polish Android application
- Perform final system latency and optimizations

# Timeline for Remaining Tasks



Questions?