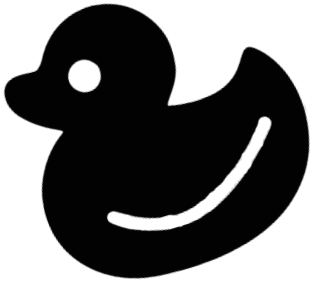


RUBBERDUCK

A Hack The North 2020++ Project by Jamie, Mia, Victorien & Loi

CONCEPT IDEA

Accessible **IOS app** for users of all ages.

Use of a **machine learning** program based off an audio database.

A project which allows for an **easier way of life** during this difficult global pandemic.

Something that can be **marketable** for a large audience and which could have a revenue.

Project which improves living for people with **disabilities**.

Innovating and **eye-catching UI** which holds the focus for a long time.

AN EMOTION RECOGNITION APP

What is it?

An app which recognizes the emotions of a voice recording.

How does it work?

Using a Machine Learning python algorithm and firebase we send recordings to be analyzed.

Who is it targeted to?

Mainly towards autistic children who have a hard time recognizing social cues. But also has other possible audiences.

APP CODE

XCode & Swift

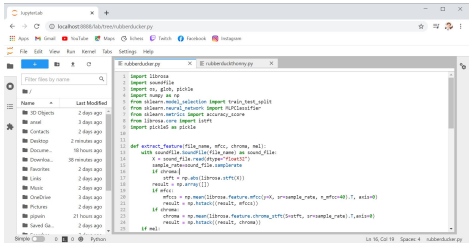
Development of the app and the UI.
Sends and receives information from Firebase to change the visuals.

Firebase

Links our two programs with the use of storage, firestore and databases which allow us to have various types of variables/files.

Python

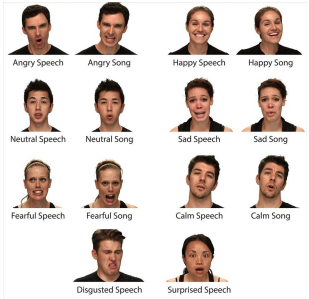
Our Machine Learning Program which takes our database of actor voices to create a model which inputs and audio file and outputs a string.



MACHINE LEARNING

Our machine learning goal was to implement and train a bot to be able to detect and recognize emotions in a person's speech. This was achieved using the following:

- Librosa; A Python library that is used to analyze audio and music.
- JupyterLab; A open source, web based UI, to help with workflow.
- RAVDESS dataset; A Ryerson Audio-Visual Database of Emotional Speech and Song dataset.
- MLPClassifier; A classifier that uses uses a Neural Network to perform classification.
- Soundfile; a Python library that reads and write sound files



APP INTERFACE

Simple easy to use interface.

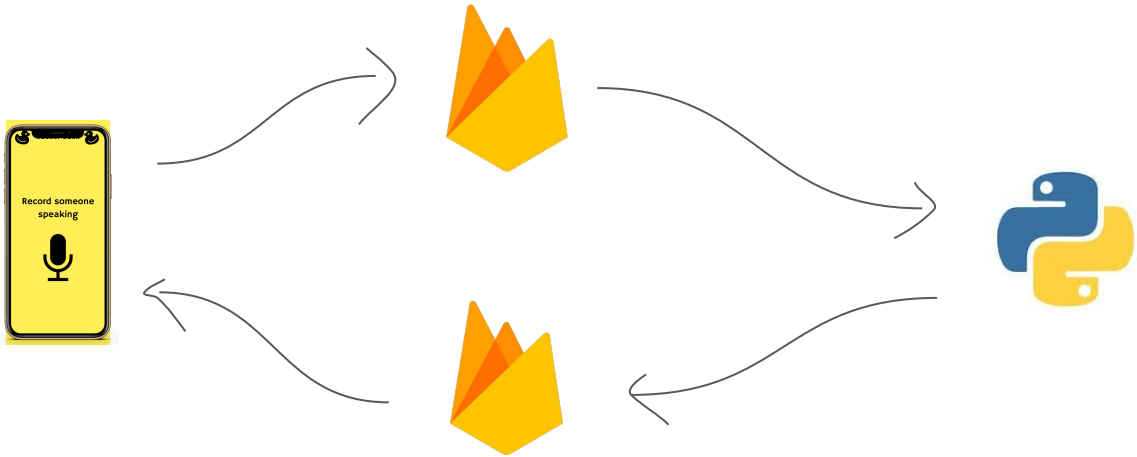
Bright colors for children & for attention grabbing.

Swift programming in the back end for easy scalability.

FIREBASE LINKING

We used Firebase to link our app to our python Machine Learning Model

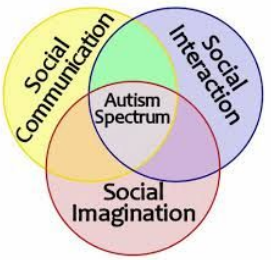
Upload audio file recorded in app to Firebase storage
Audio processed in python model
Send output from API to app through Firebase Database and Firestore

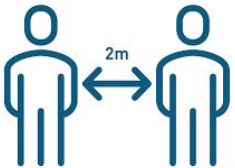


HACK THE NORTH

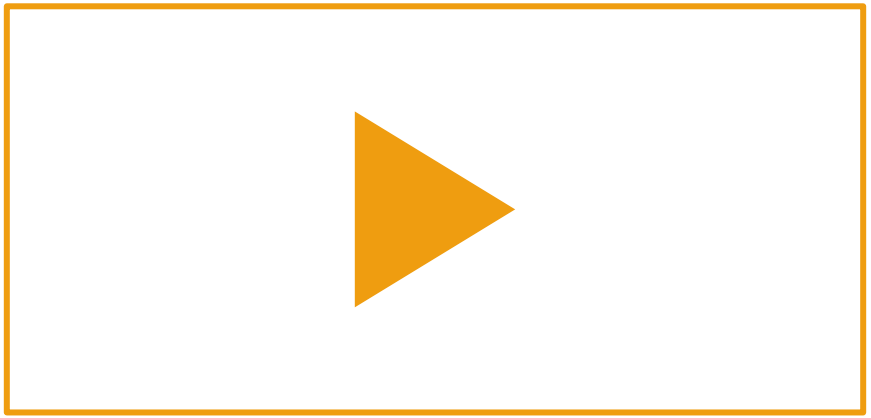
Marketability (who does this help?)

- In current concept, best fits the need of children with **autism**
  - Some children with autism struggle to understand emotions relayed in conversation
  - Help pick up more social cues
- Fits need of communication practice during era of **social distancing**
  - Over the phone communication can feel very robotic
  - Could help therapists understand their patient's moods
- **Customer service** (understanding concern/outlook over the phone)





APP DEMO



FUTURE DEVELOPMENTS

Irritated

Confused

Stressed

Tired

Near Future

Add more emotions

Add more samples to improve the model

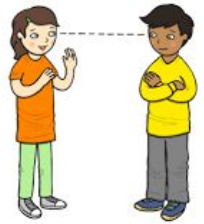
(Develop data security and ask users for permission to use samples)

Far Future

Conversation analysis

Expand to other devices (android, laptop, etc)

Add conversation videos to practice eye contact



MEET THE TEAM!

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