



Detecting emotions from audio

Part of the SMART teddy-bear initiative

Team Emo

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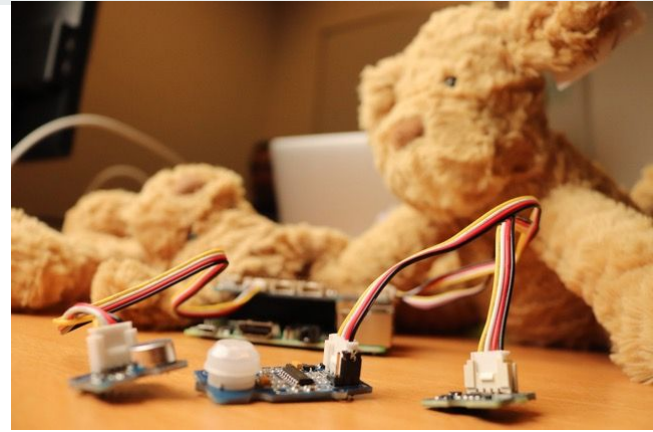
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Introduction

Smart teddy bear project

- The Smart Teddy is a therapeutic companion
- The Smart Teddy observes the senior citizen using its sensors
- The Smart Teddy can understand what the senior citizen is doing
- e.g. how much time the senior citizen is enjoying his/her time
- From this information The Smart Teddy can estimate the Quality of Life





Team Emotion

End goal:

- Classifying emotions from audio data
- Can help determine if a senior is able to live independently at home
- Can help to remotely determine if a senior with dementia is declining



Concept research question

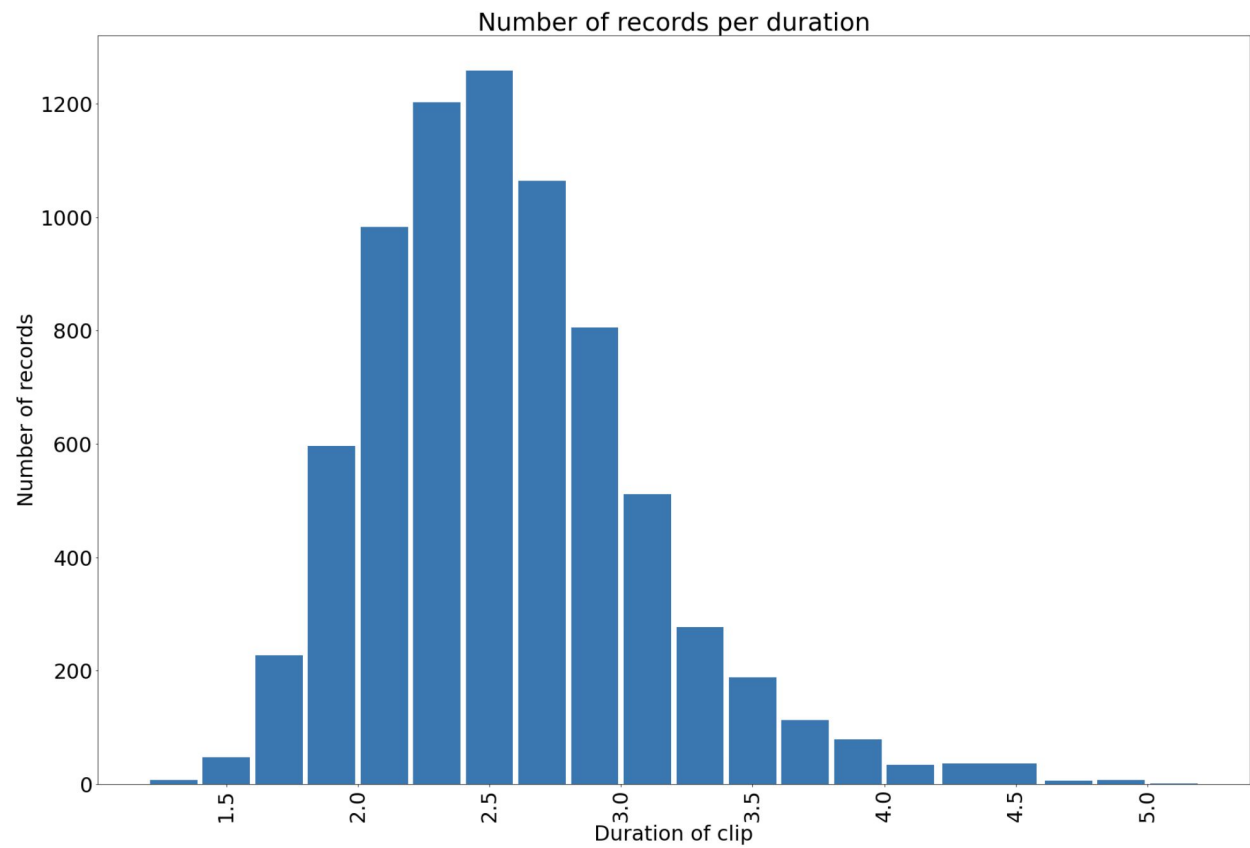
How can current methods of classifying emotions from audio in household environments be improved?

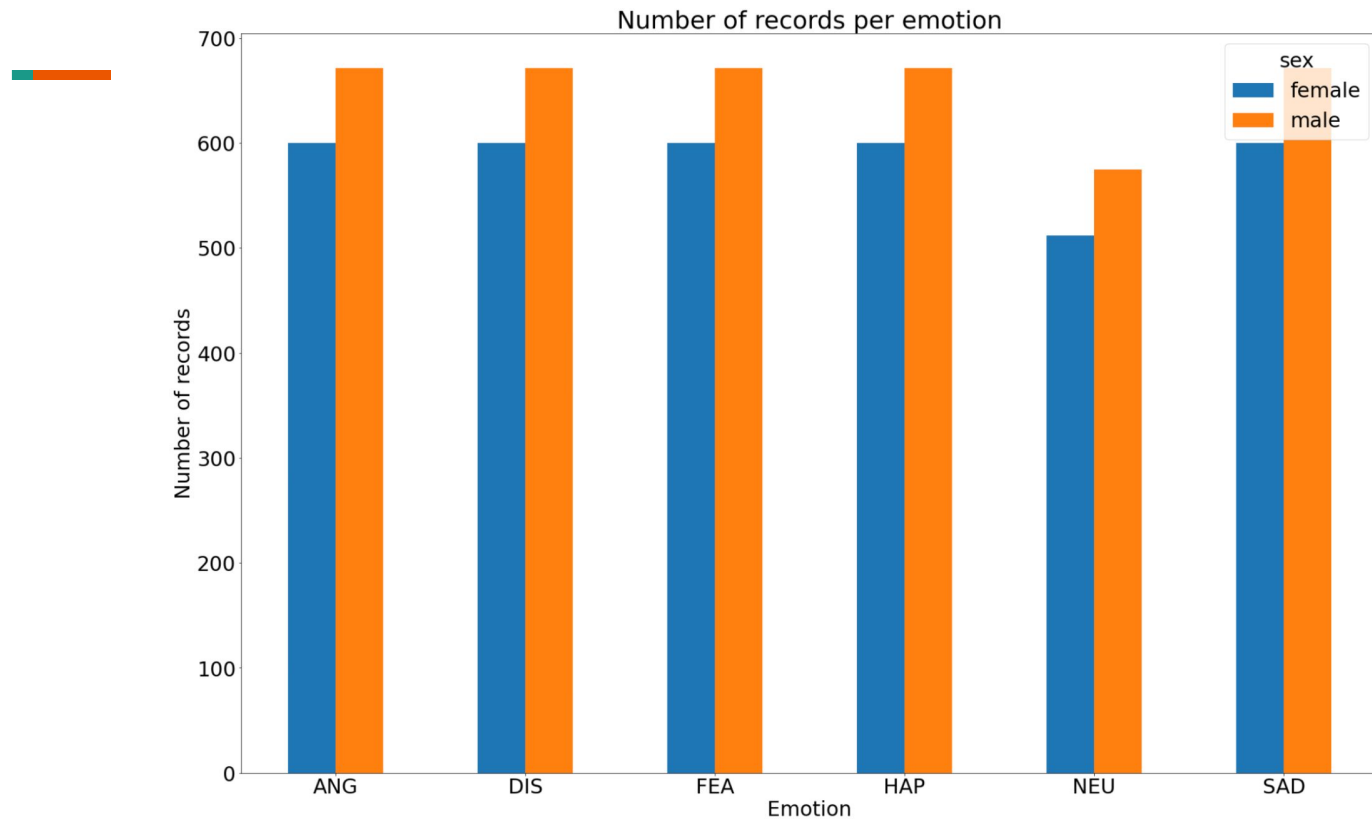
What have we accomplished so far

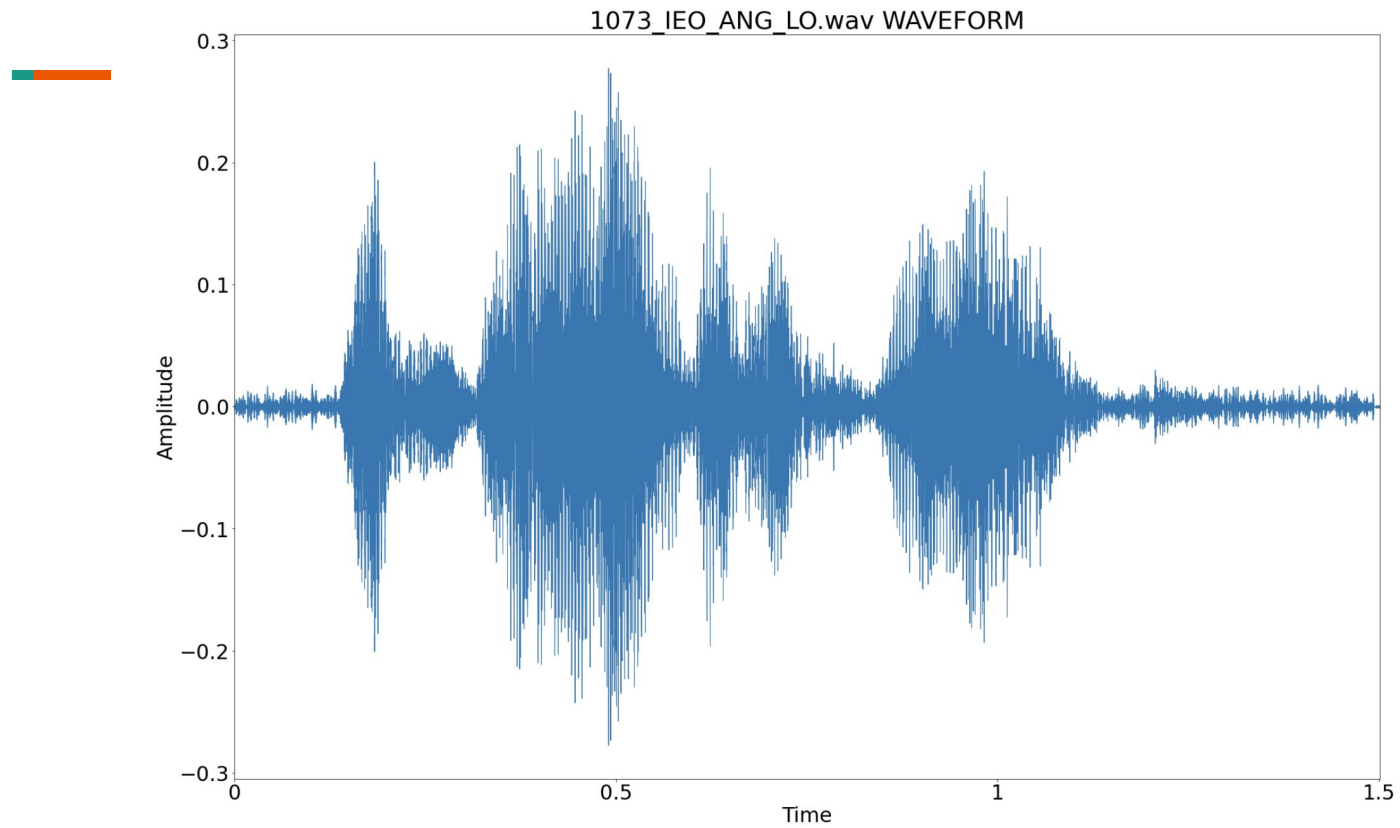


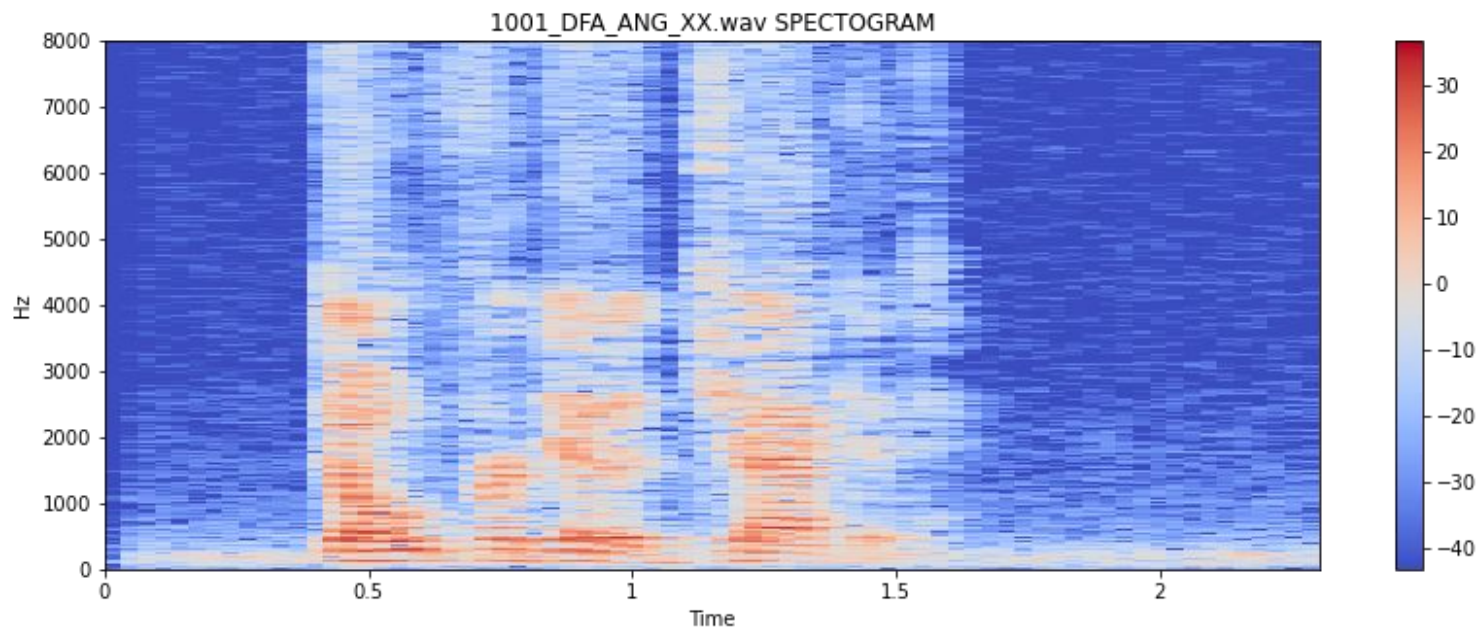
Data-gathering

- Literature research
- Obtaining datasets
 - RAVDESS
 - CREMA-D
- CREMA-D data exploration
- CREMA-D feature extraction



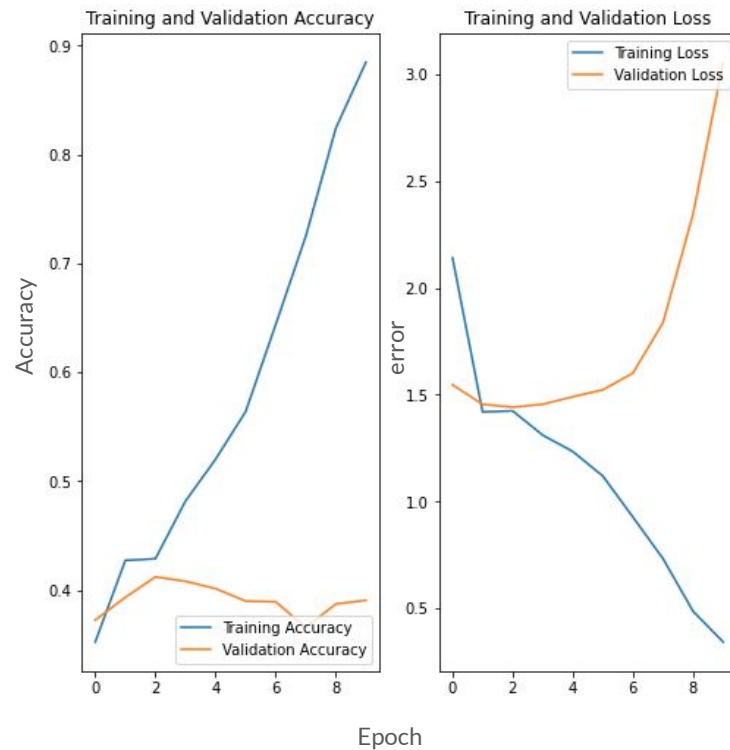






Deep dive into CNN

- Uses spectrograms





We took some steps backs

- Support Vector Machine (SVM)
- Multilayer Perceptron (MLP) / Feedforward neural network
- Logistic Regression



Results

ML mode	RAVDESS Accuracy	CREMA-D Accuracy
MLP	Train: 100% Test: 82%	Train: 87% Test: 53%
SVM	Train: 70% Test: 65%	Train: 54% Test: 50%
Logistic Regression	Train: 71% Test: 63%	Train: 54% Test: 51%



Next steps



Data cleaning & augmentation

- Trim the silent parts
- Create more data with the data that we have
- Add household background sounds



Improve current models

- (Research) evaluation method
- Hyperparameter tuning

Any questions?
