Automated COVID-19 Detection Using Deep Learning

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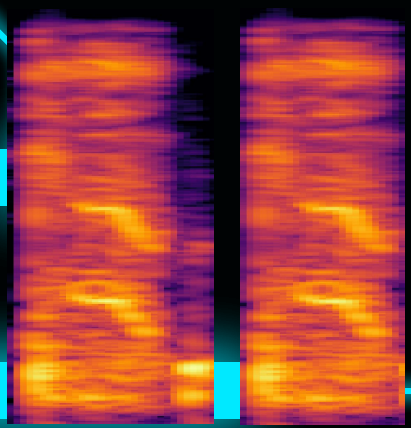
Task Matrix: Milestone 5

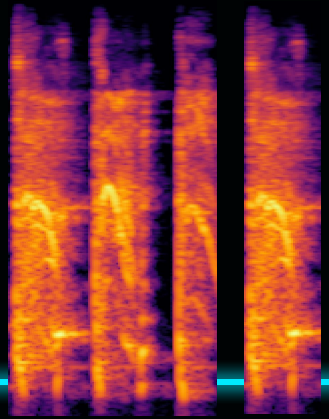
Task	Rodrigo	Emma	Lamine	Audrey
1. Finish cleaning data	0%	100%	0%	0%
2. ML testing and refinement of framework	0%	10%	90%	0%
3. Web testing	50%	0%	0%	50%
4. Integrating Base ML Model with Web Using a Neural Network Framework	50%	0%	0%	50%

Task 1 - Finish Cleaning Data

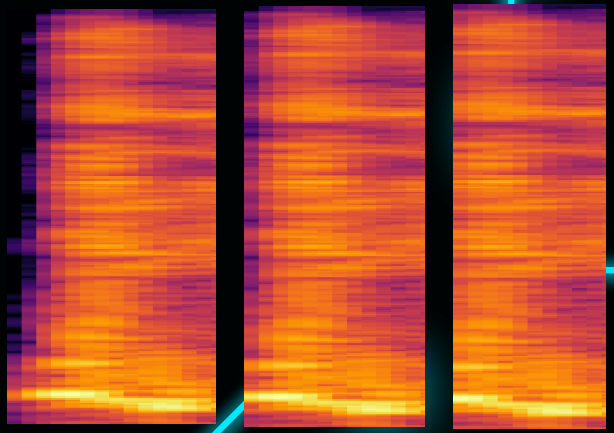
- Shortened all mel-spectrograms to be 1 cough in length to further improve accuracy
    - Removing non cough audio files did not improve accuracy



Audio 23



Audio 242



Audio 226

Task 2 - ML Testing and Workflow Improvements

- Testing is still getting accuracy of about 48% on our CNN
  - Not usable in any practical setting
  - More layers and further augmentation are being added in addition to the updated dataset with one cough per Mel-spectrogram
- ResNet50 is not being tested on that iteration of dataset, and is being tested on the most recent dataset with only one cough included in each Mel-Spectrogram

Task 2 - Refine ML Workflow

- **Oversampling**: Used for the COVID-19 class to address class imbalance.
- **Augmentation**: Applied three techniques to increase dataset size and diversity.
- Changed the data augmentation method to be applied randomly to covid 19 class replaced timestretch with loudness and quietness
- **Improved Learning**: Enhanced the model's capacity with better preprocessing.
- **Data Split**: 60% Training, 20% Validation set, and 20% Test set.

Task 3 - Web Testing

- Login/logout functionality has passed testing
- Recording functionality in local version of app has passed testing
- Database integration with new user model has passed testing
    - Database integration for audio storage has not yet been tested
- Current method for classifying audio via the local version of the app has failed testing
    - Working to develop an alternative method for requesting classification

Task 4 - ML/Web Integration

- Substituted the trained benchmark for the placeholder ML model
- When the final version of the model is fully refined, it will be substituted for the benchmark model
- As stated in the web testing section, there are still issues with the apps ML classification functionality that we are in the process of resolving

Task Matrix: Milestone 6

Task	Rodrigo	Emma	Lamine	Audrey
1. ML Testing and refinement of framework	Test using benchmark model (ResNet50) and initial testing from our model. Continue to improve the ML model. Determine which improvement strategies to implement based on testing results.			
2. Web testing	Continue implementing and testing additional features to optimize user experience when using the COVID detector, including symptom tracking form.			
3. Integrating WebApp and CNN	Determine what may need to change within the web framework to better accommodate and suit the CNN. Resolve bugs with current integration strategy. Continue to update app with newer versions of CNN as they are developed.			

Milestone 6

April 28 — ML Testing

April 28 — Refined ML workflow

April 28 — Continued Integration of CNN and WebApp

Questions?