REU Project: Machine Learning for Breathing Pathology Detection with Emphasis on Bronchiectasis

Lauren Everett¹, Sunil Rao², Andreas Spanias², Michael Esposito³

[¹] SBHSE at Arizona State University  [²] School of ECEE at Arizona State University  [³] SOLS at Arizona State University

- Kaggle Respiratory Audio Databases with 920 samples
- Using spectral estimation and convolutional neural networks
- Implementing VGG-13 deep learning model for detection
- Challenge: data is heavily biased with COPD data
- Focus on detecting Bronchiectasis from Healthy patients
- Current accuracy = 75.0%

Confusion Matrix

Predicted label accuracy=0.7500; misclass=0.2500

Spectrograms

Bronchiectasis

Healthy