

FLORIDA TECH



Automated COVID-19 Detection Lamine Deen, Emma Conti, Rodrigo Alarcon, Audrey Eley Faculty Advisor: Dr. Nematzadeh, Dept. of Computer Science, Florida Institute of Technology

<u>eprocessing</u>	
וg	 Used Kaggle dataset: "Covid-19 Cough
dor	Classification"
ader	 All recordings converted into Mel Spec
	 Binarized target variable to "Healthy"
	CNN Model Achritechtur
	• Block 1: Conv 3×3 (1 \rightarrow 32) \rightarrow BN \rightarrow Rel
	$2 \times 2 \rightarrow Channel-Attention 32 \rightarrow Spatial$
IN	• Block 2: Conv 3×3 (32 \rightarrow 64) \rightarrow BN \rightarrow Re
	$2 \times 2 \rightarrow Channel-Attention 64 \rightarrow Spatial$
	• Block 3: Conv 3×3 (64 \rightarrow 128) \rightarrow BN \rightarrow F
	$2 \times 2 \rightarrow$ Channel-Attention 128 \rightarrow Spatia
	• Head: AdaptiveAvgPool 1×1 \rightarrow Flatten
m	\rightarrow ReLU \rightarrow Dropout 0.5 \rightarrow FC 64 \rightarrow 2 (lo

- **ResNet50 model uses pretrained ResNet50** model and replaces with our data at the last layer to maximize accuracy
- Attention Enhanced CNN uses 3 convolutional blocks
- 1,118 datapoints are used under each classification using oversampling to ensure there is an equal amount of each evaluation type
- Attention Enhanced CNN was selected for integration within the web application
- Highest achieved accuracy with Attention Enhanced **CNN was 69%**
- Precision was 73%, minimizing false positive and negatives
- uses a binary model to determine if user has COVID or is considered healthy
- results may indicate the user is 'symptomatic' under a healthy evaluation based on confidence level







Home Project Research Dashboard Lo

