Detecting AF Burden using 1-D CNNs

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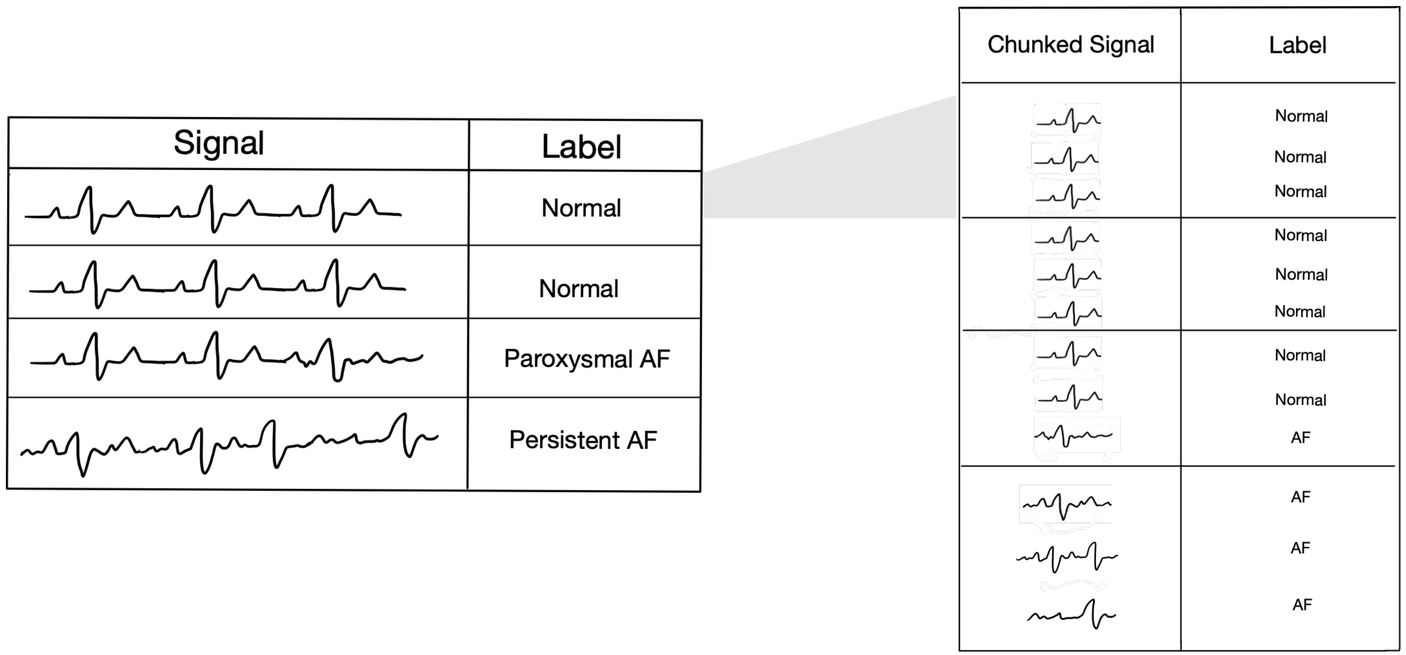
Problem

- 1-D CNNs have been used to classify ECG sequences into types of AF
- Can we use CNNs to detect AF burden metric instead?
- **AF Burden = ratio of sequence marked with AF**
- More informative than simply sub-typing AF

AF Burden = .35

Method

- Chopped all ~1400 ECG sequences into 30-second and 10-second chunks
- Ran binary classification to categorize chunks as AF/non-AF
- Aggregate chunks to the sequence level to calculate Burden



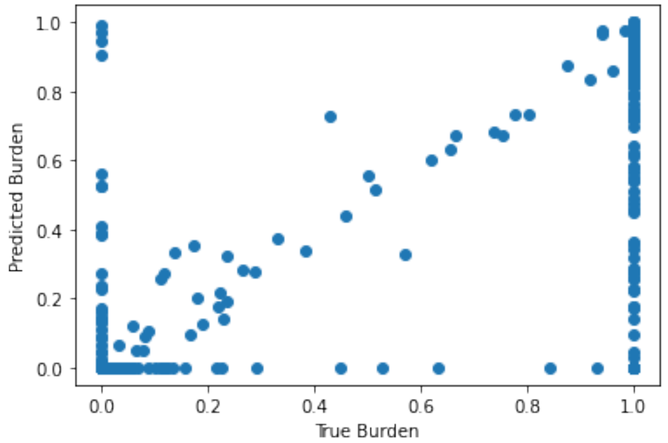
Results

Using a 1-D CNN model w/ 9 layers:

AF Chunk Classification	Accuracy	F1
30-second chunks	0.893	0.891
10-second chunks	0.910	0.910

AF Burden	MAE
30-second chunks	0.15
10-second chunks	0.12

Burden Differential (30-second Chunks)



Burden Differential (10-second Chunks)