

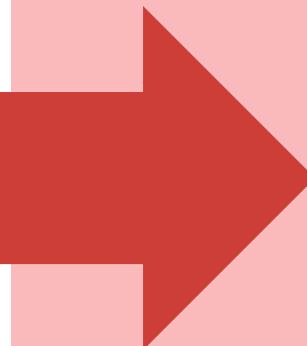
ECG SIGNAL CLASSIFICATION VIA FOURIER TRANSFORMS

The role of
electrocardiograms (ECGs)

Author: Calvin Chan

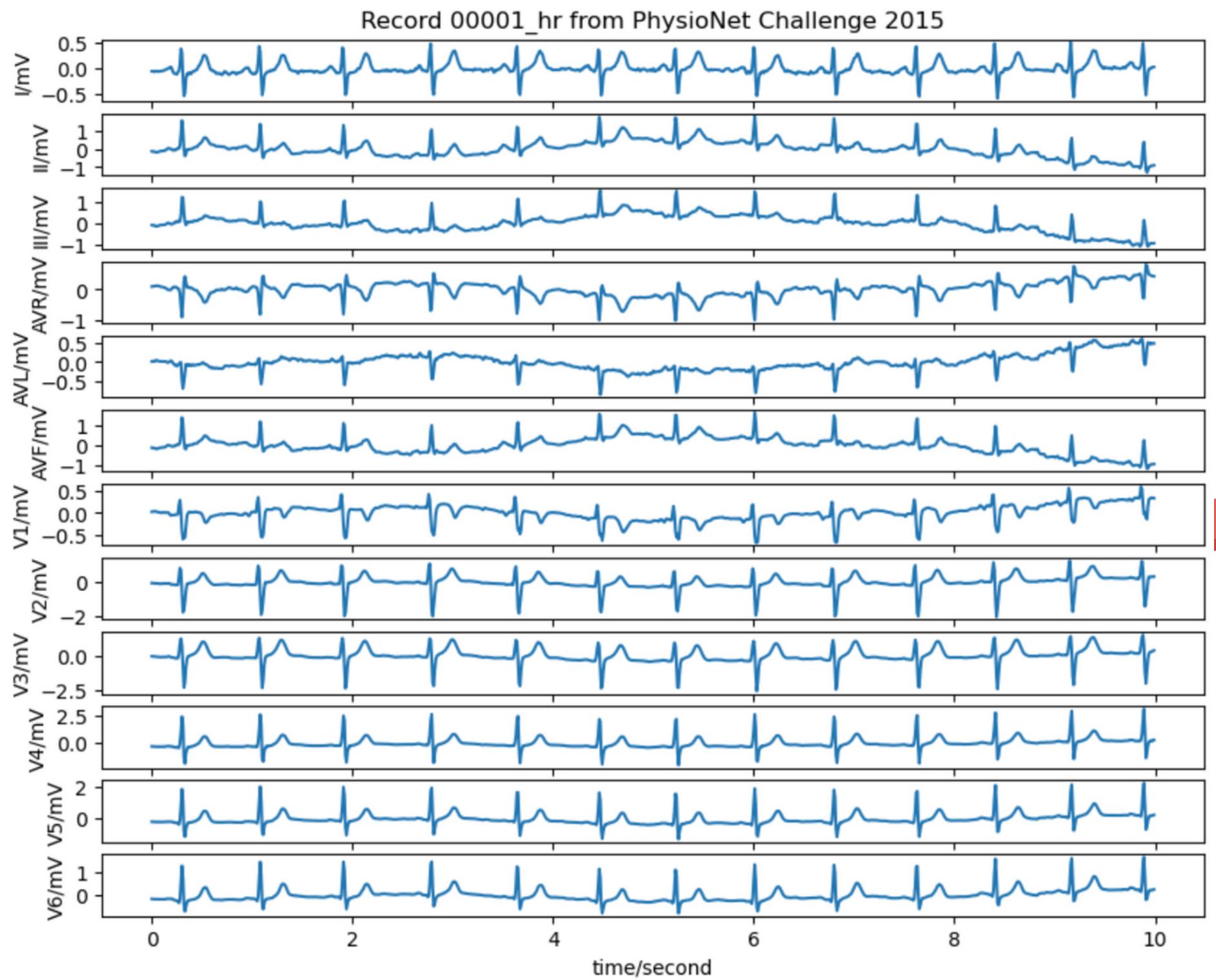
Benefits of ECGs

- Assessing heart function
- Detecting heart abnormalities
- Diagnosing cardiac conditions



Problem & Solution

- ECG readings rely on human interpretation
- Inaccurate readings can lead to poor treatment outcomes
- Use data science models to help with diagnosis



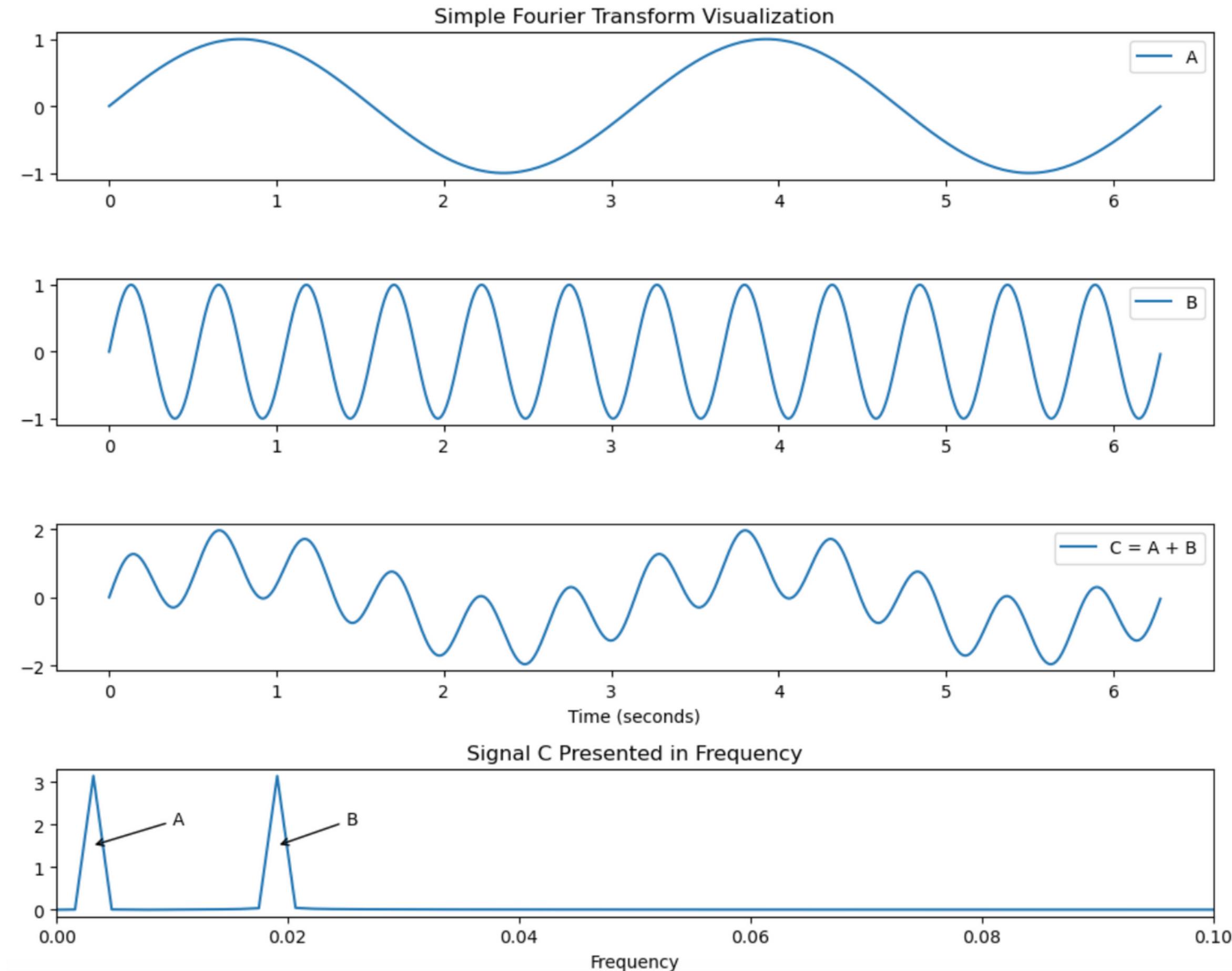
PTB-XL from PhysioNet

- Contains 21799 ECG records, each record contains 12 leads
- Five diagnostic classes (NORM, HYP, MI, CD, STTC)

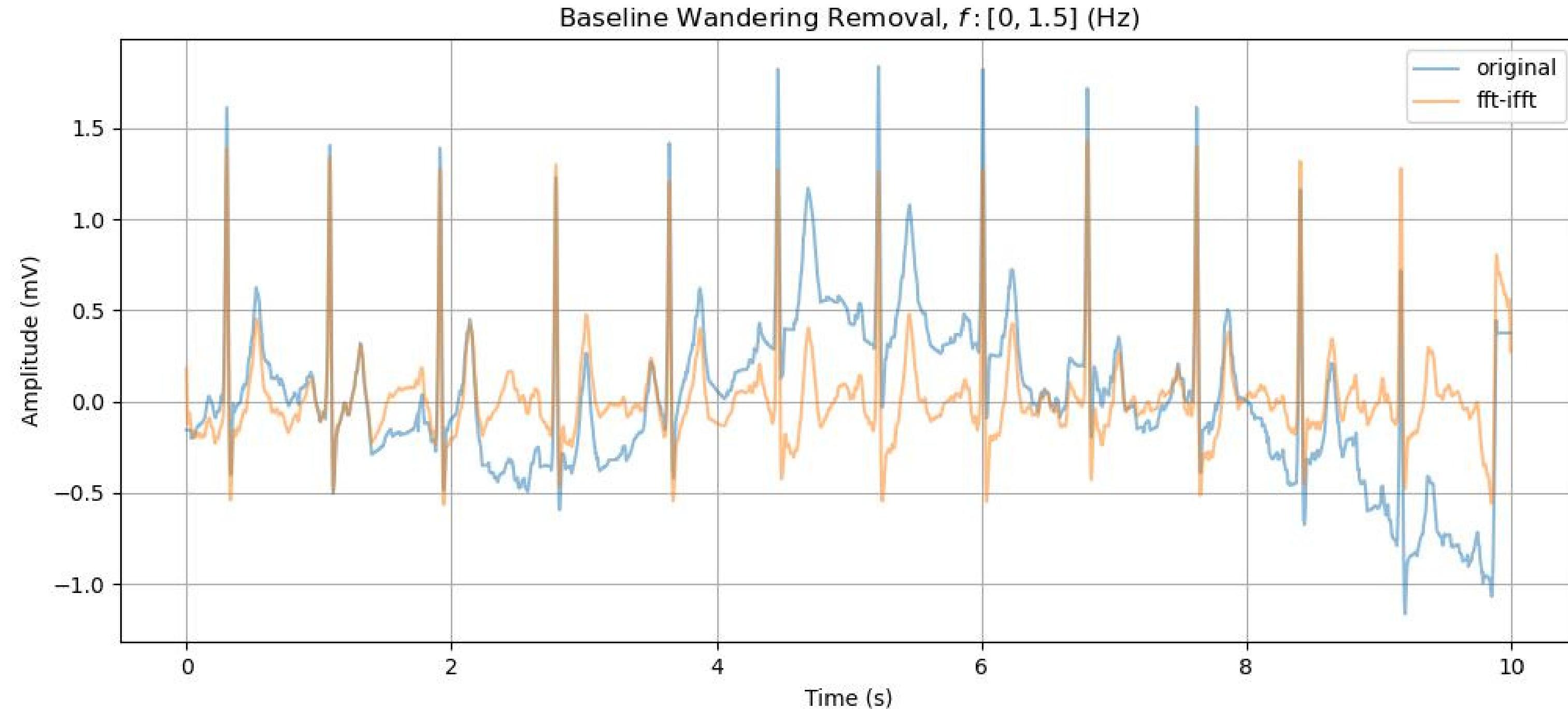
Data Cleaning

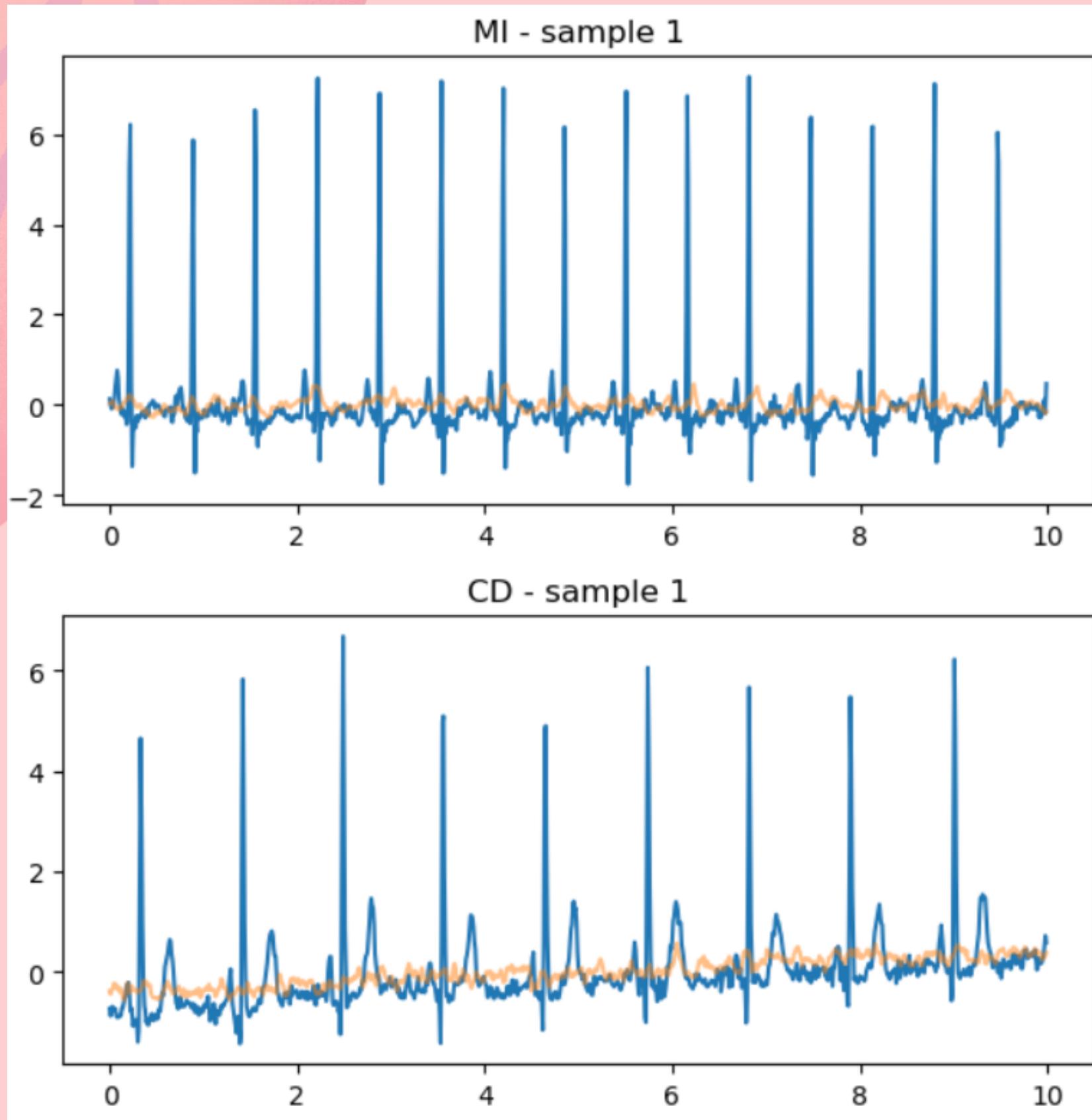
- Removing or filling in missing information
- Removing duplicated data

Fourier Transforms



Fourier Transform Cleaning





BASELINE MODELING

- Using autoencoders do not work well with our data
 - Unable to capture features in our signal
- Try out other model types

Recurrent Neural Networks

Model Evaluation

- **~3000 parameters/weights**
- **Binary Classification**
- **Accuracy**
 - **Training : 80.6 %**
 - **Testing : 80.1 %**
- **Recall score**
 - **Abnormal : 88 %**

