

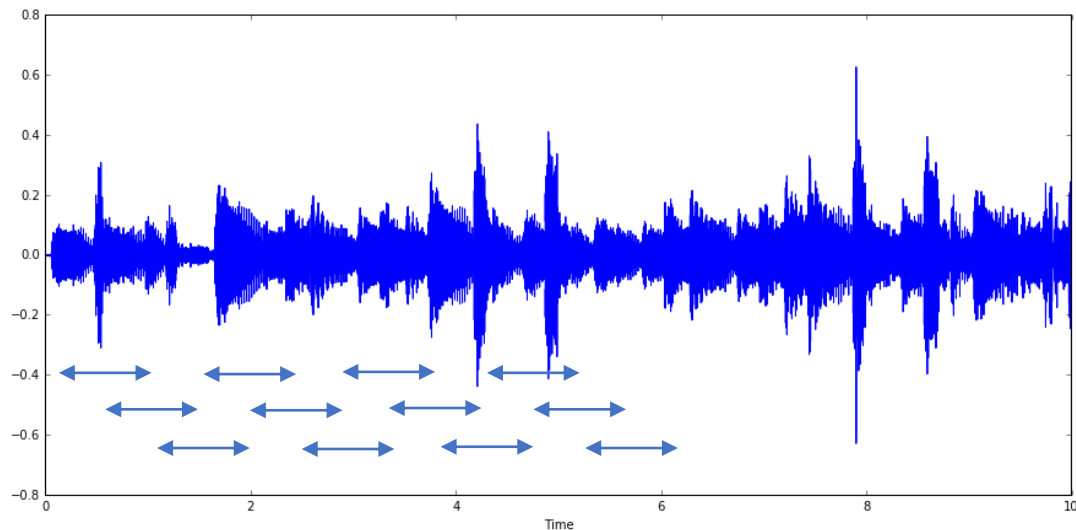


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NeuraBeats

Onset Detection Challenge

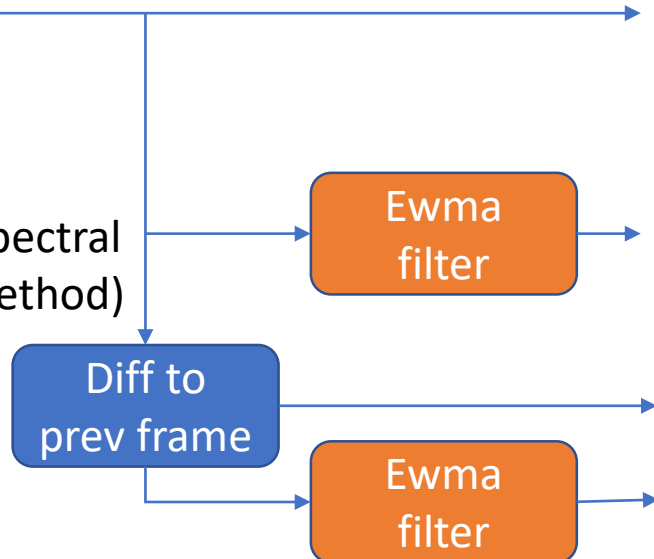
2022



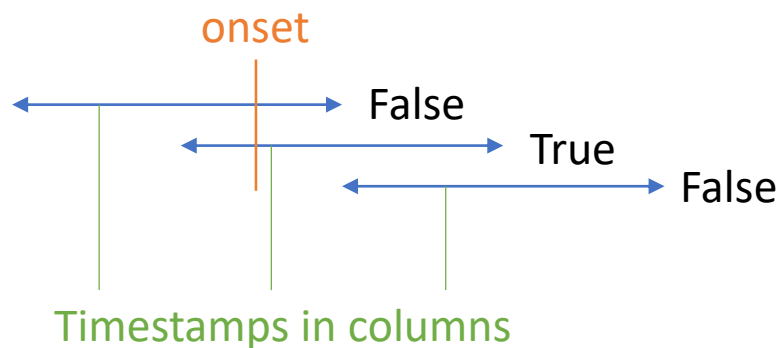
- Sliding window approach with overlapping frames of 6600 samples (~150ms) with 25 fps (hop size = 1800 samples or 40 ms)

Features:

- Mean
- Std
- Signal Energy
- Average power spectral density (welch method)
- Kurtosis
- Skew
- Superflux



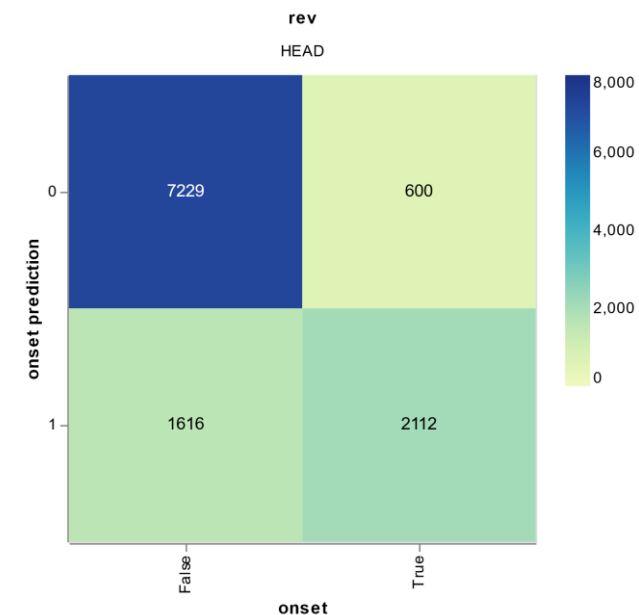
Onset labelling strategy:



Column entry is labelled as onset, if the gt timestamp is between the start of the frame and the start of the next frame.

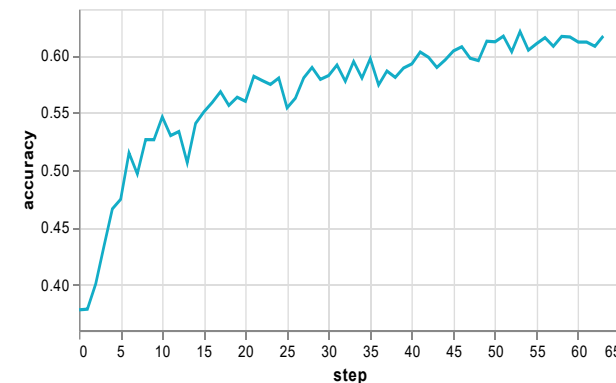
Results:

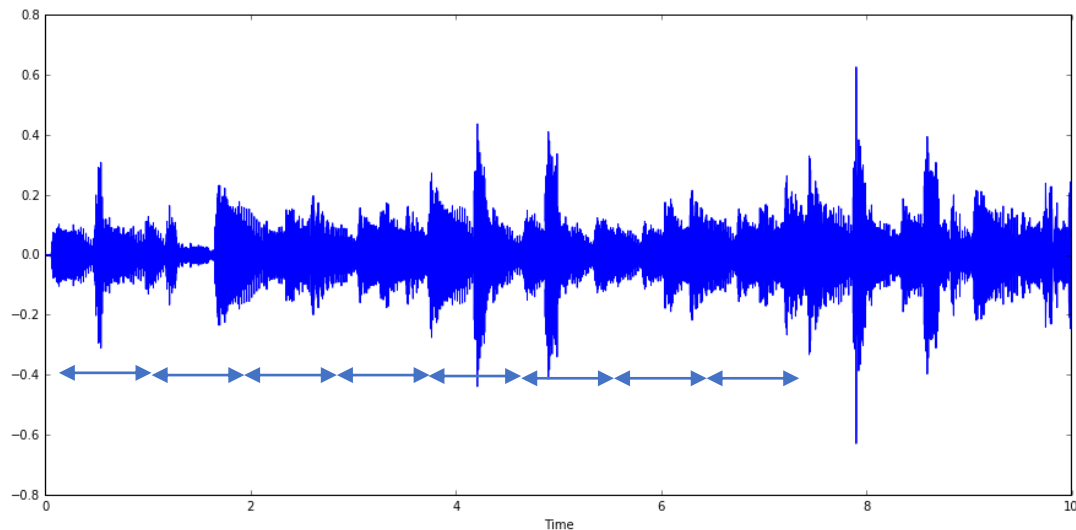
Test set onset F1 score
0.39



Modelling:

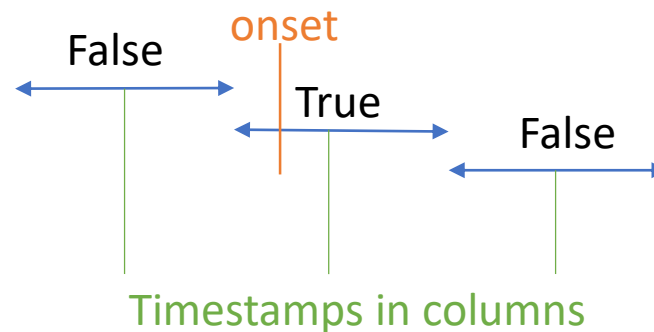
feature normalization, simple MLP ([256, 128, 128]), MC dropout, Lamb optimizer, class-weighted label smoothing CE loss, one-cyle learning rate policy





- Sliding window approach with overlapping frames of 3150 samples (~71ms) with 14 fps

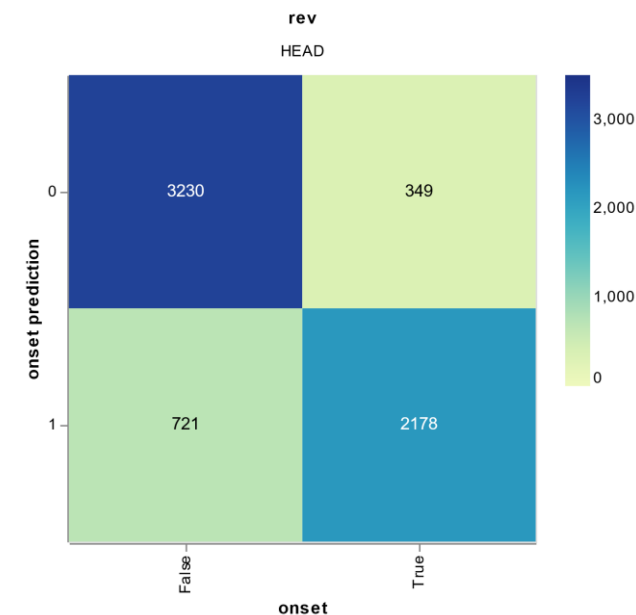
Onset labelling strategy:



Column entry is labelled as onset, if the gt timestamp is between the start of the frame and the start of the next frame.

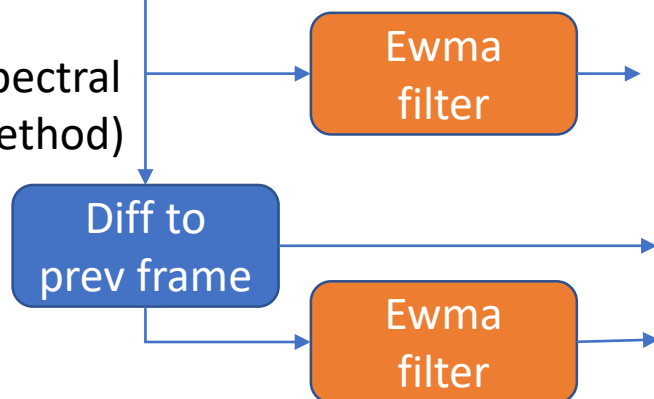
Results:

Test set onset F1 score
0.429



Features:

- Mean
- Std
- Signal Energy
- Average power spectral density (welch method)
- Kurtosis
- Skew
- Superflux



Modelling:

feature normalization,
simple MLP ([256, 128,
128]), MC dropout, Lamb
optimizer, class-weighted
label smoothing CE loss,
one-cyle learning rate policy

