

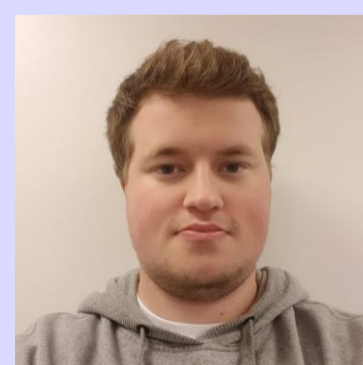
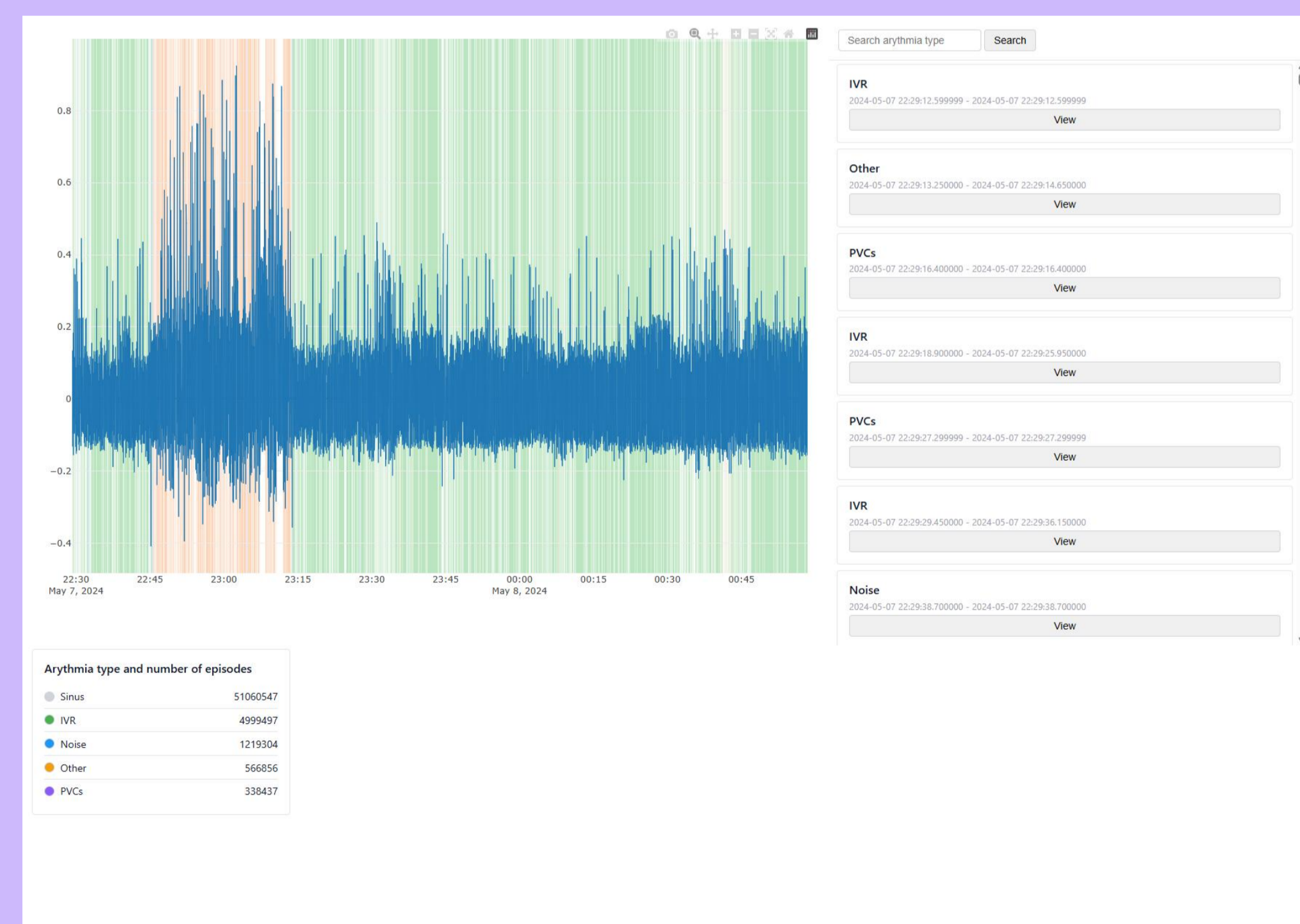
Visualizing machine learning segmented long-term electrocardiograms using largest triangle three buckets

Purpose and aim

The visualization and analysis of long-term and high resolution (1000Hz) electrocardiograms (ECG) is important for diagnosing and monitoring of cardiac disorders such as arrhythmias. Long-term recordings can be hard and time consuming to manually review for a clinical diagnosis. Machine learning (ML) enables segmentation of ECG data but there is still a need to display the ECG with its associated segmentations for clinicians to verify the diagnosis. Therefore, the aim of this master thesis is to develop a software that is able to render ML segmented long-term ECG in a manner that is easy to use, efficient and has low latency.

Results and important findings

The development of visualization software has shown that it is possible to render large long term ECG recordings by applying different techniques such as level of detail (LOD) where the ECG dataset is resampled to three versions at different resolutions which is switched between depending on zoom level. Furthermore, the largest triangle three buckets algorithm is applied to downsample the data for efficiency of rendering but keeping the shape of ECG waveform.



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