



Cardiovascular Library Continuous Cardiac Arrhythmia Detection

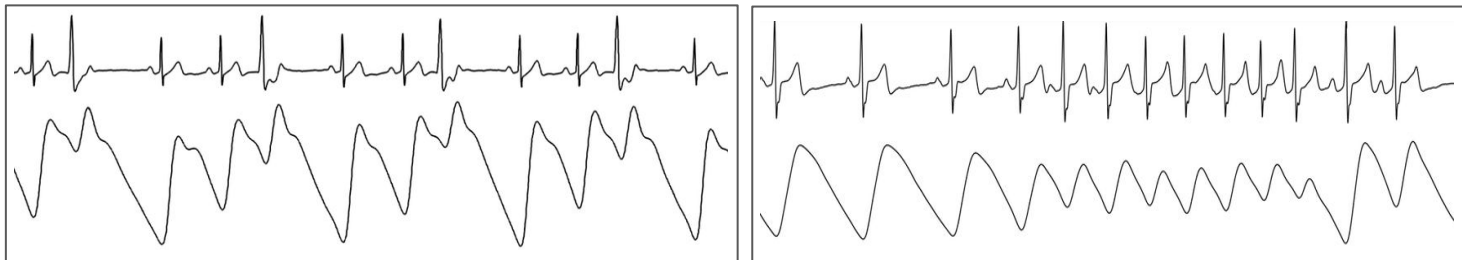
Atrial fibrillation (AF) is a cardiac rhythm disorder associated with increased morbidity and mortality. It is the leading risk factor for cardioembolic stroke and its early detection is crucial in both primary and secondary stroke prevention.

We enable continuous monitoring of AF using any kind of wearable device that contains PPG optical sensor and an accelerometer.



What's new in this approach?

AF is usually detected using an ECG monitoring. ECG is a non-continuous approach and requires the user to actively place his other hand on the watch\ ring face. By using a PPG only, we allow a continuous and unobtrusive monitoring solution.



Two examples of AF and how it's reflected in both ECG and PPG signals

Nohayo's AF algorithm performance

The algorithm is implementing SP & Machine Learning approaches to detect PPG sessions showing AF characteristics.

We've collected more than 430 sessions of synced PPG and ECG signals with various cardiac arrhythmias. Our first ready app is AF detection. In the next release we will also be able to detect other cardiac arrhythmias.

The algorithm is implemented in embedded C and can run on wearables like a smartwatch, ring, and earbuds that has a PPG, a 3D accelerometer, and a DSP unit.

The algorithm was compared to a physician manual diagnosis of the ECG signals, and have the following results:

Overall Accuracy: 0.962, AUC: 0.998, AF specificity: 0.974, AF Sensitivity: 0.931