NOHAYO

Smart Solutions for Wearables

Cardiovascular and Sports Library

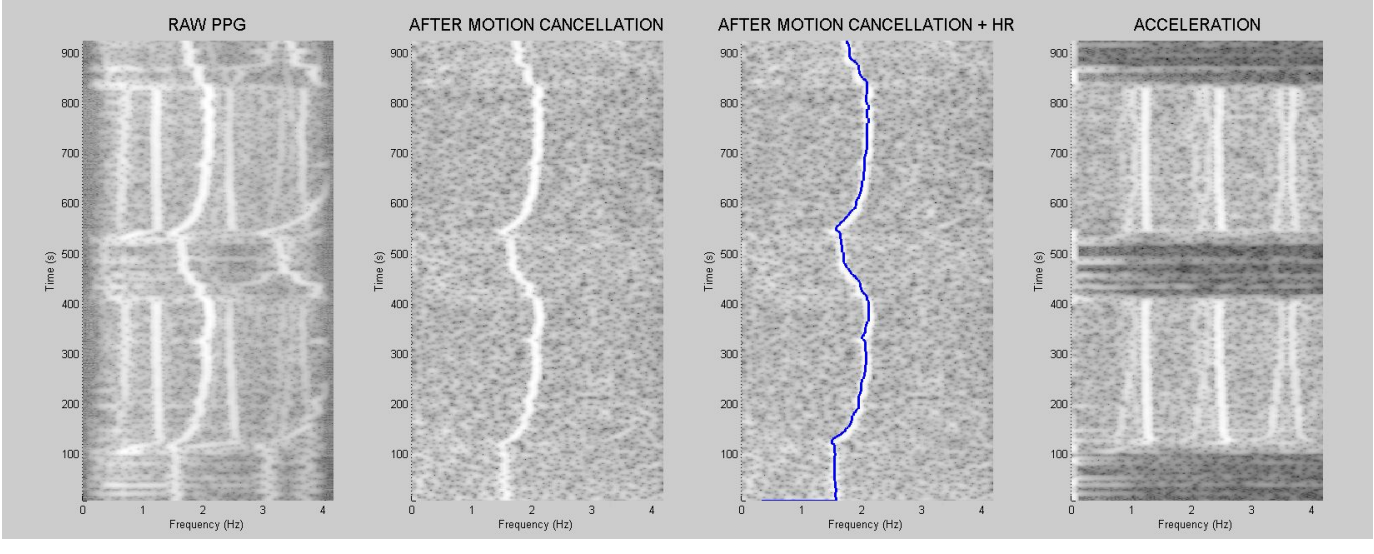
Heart-Rate Tracking Algorithm

We enable any kind of wearable device that contains PPG optical sensor and an accelerometer to become a Heart-Rate (HR) tracker.

Our algorithm is highly accurate, very slim in terms of memory usage and computational complexity, and can be used both during sports and fitness activities, or for all-day monitoring (wellnss).

How does it work?

The HR algorithm precisely removes motion artefacts from the optical PPG signals. This allows to track the HR value at any activity done be the user. Below is a spectral illustration of the motion noise filtration, allowing accurate HR tracking.



Nohayo HR algorithm performance

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 Polar chest strap, and shows the accuracy shown in the table.

	Wrist	Ring	Ear
±5BPM	91.2%	93.8%	94.6%
±10BPM	95.9%	96.1%	97.2%

The average time until the first calculated HR is 6.1±3.7 seconds at any given activity level.

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