Photoplethysmogram (PPG)

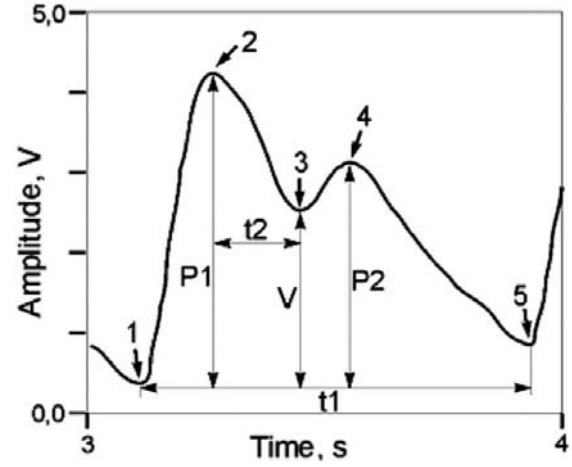

Figure 6. Example of blood volume pulse signal with amplitude and timing markers. Time t1 (between markers 1 and 5) indicates the interbeat interval and is used to calculate the heart rate. Pulse measure P1 (marker 1) is a measure of pulse amplitude. Volume at V (marker 3) is the indicator of the blood volume influenced by the dicrotic notch. Reprinted with permission from Hlimonenko, Meigas, and Vahisalu (2003).

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PPG processing

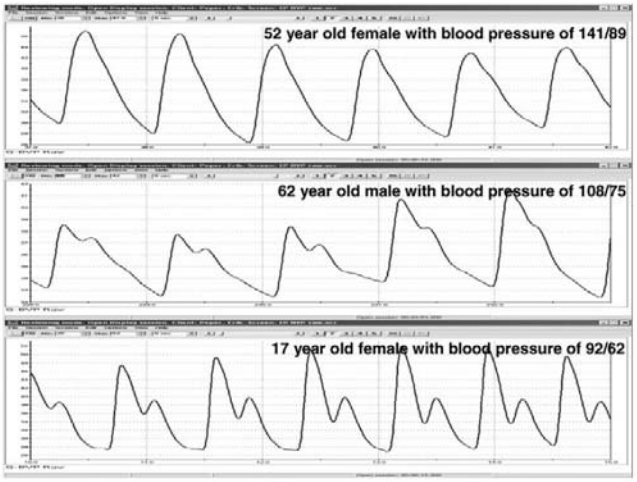

Figure 7. Comparison of finger blood volume pulse recording of parents (62-year-old father and 52-year-old mother) and child (17-year-old daughter). The mother has borderline hypertension. The absence of the dicrotic notch in the borderline hypertensive (top) tracing suggests a stiffening of the arteries, indicating increased blood pressure.

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PPG touch sensor

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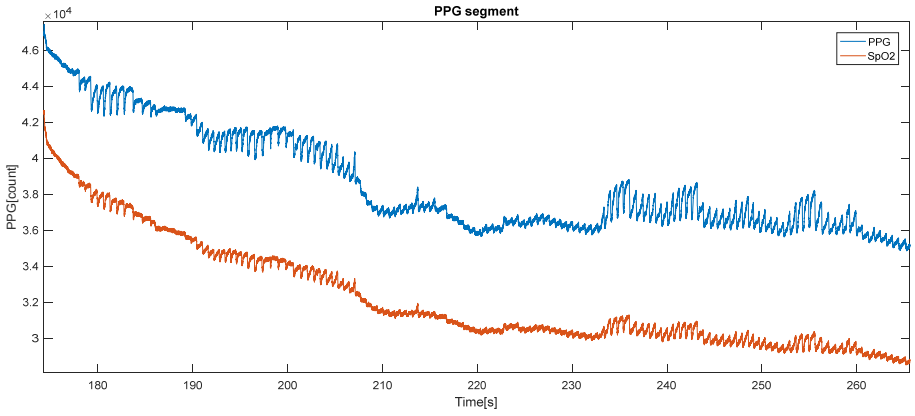
PPG example



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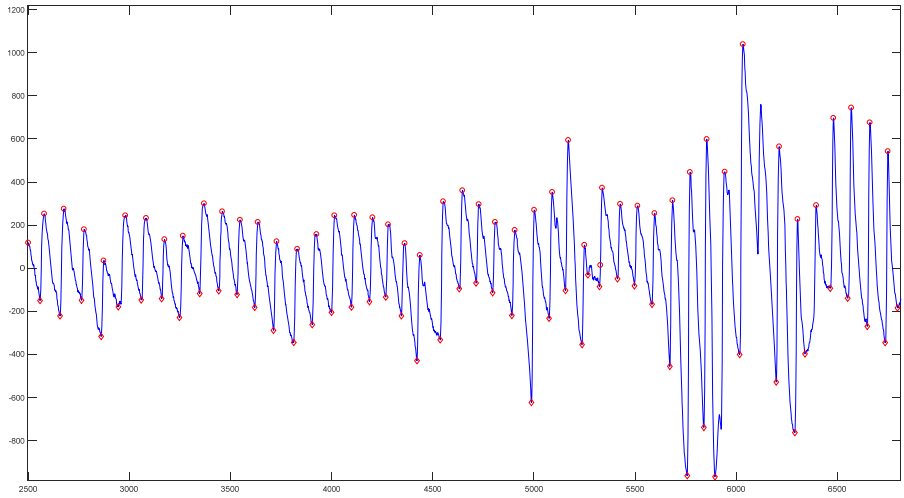
Processed PPG signal



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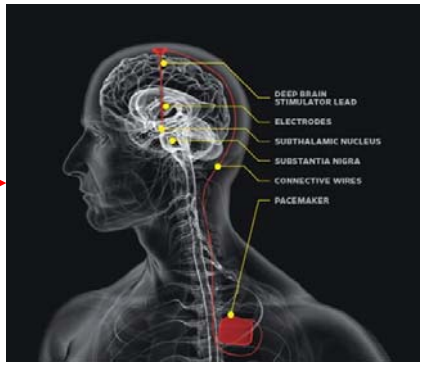
Sensor technology

- Disappearing technology



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System Architecture

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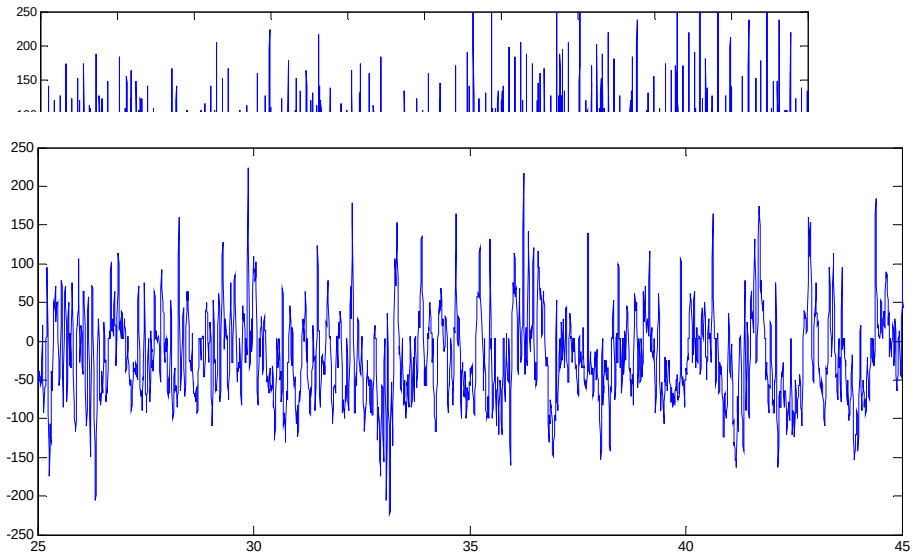
EEG Signal



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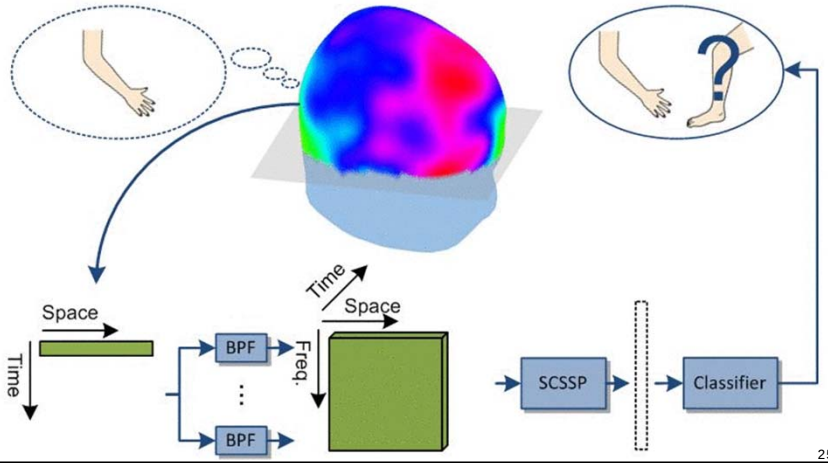
BCI example

- Brain-computer interface
- EEG/EMG/fMRI
- Direct control of artificial limbs or external devices



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Mind control

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