Sensors and Data

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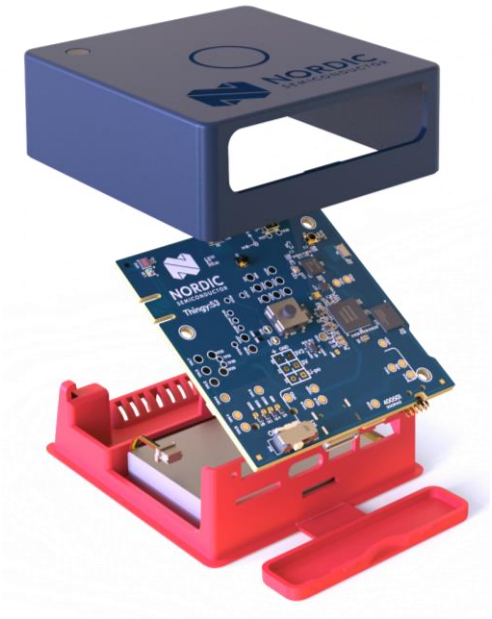
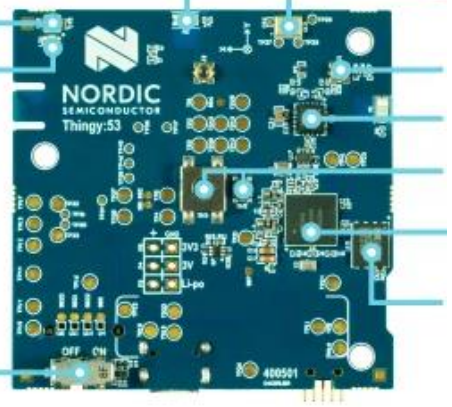
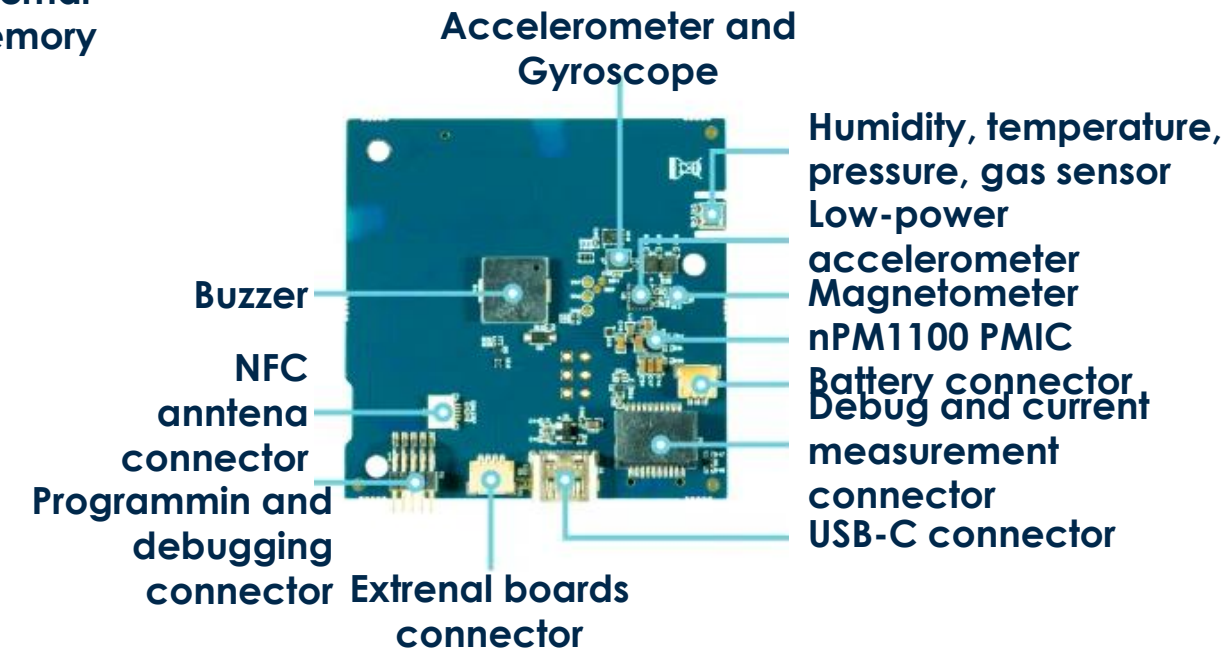
Overview

Sensors and Data	Explore different devices
	Explore different sensors in each device
	Record video and signals
	Visualize signals
	Process data

Body Sensor Network





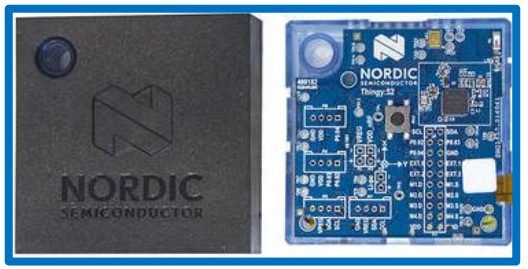


Body Sensor Network

Smartphone

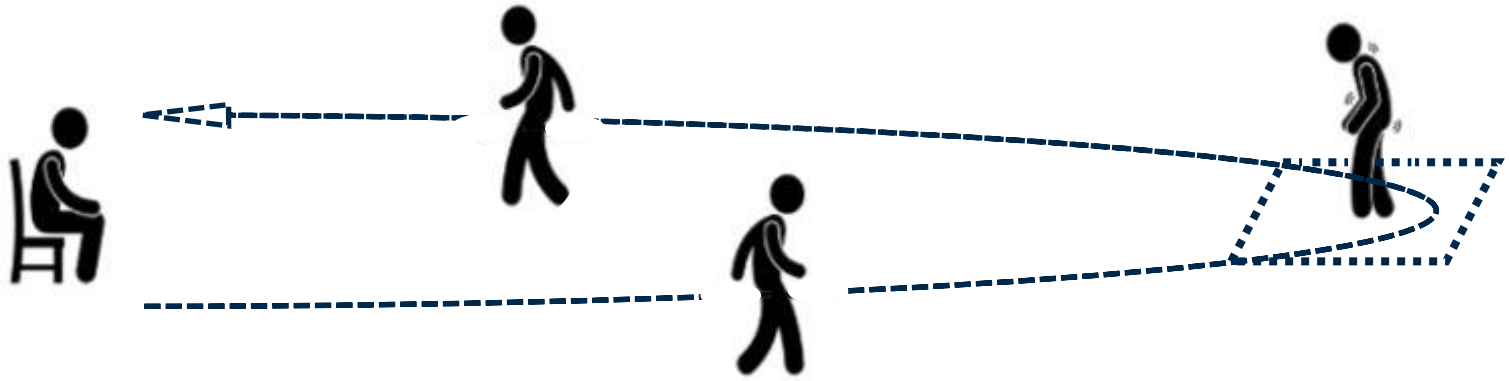
Tripod

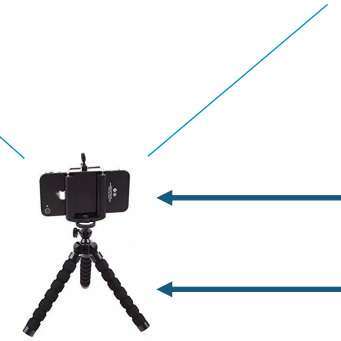
4 sensors



Pocket

Body Sensor Network

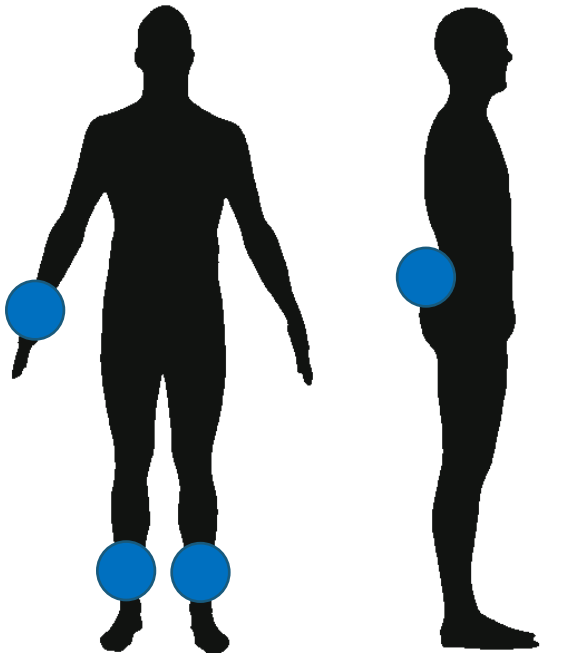


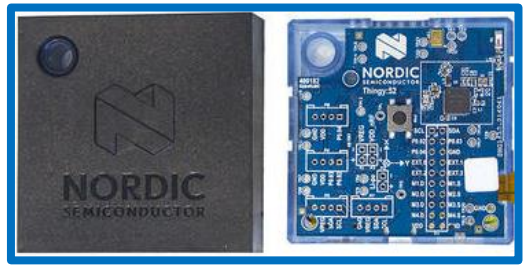


Smartphone

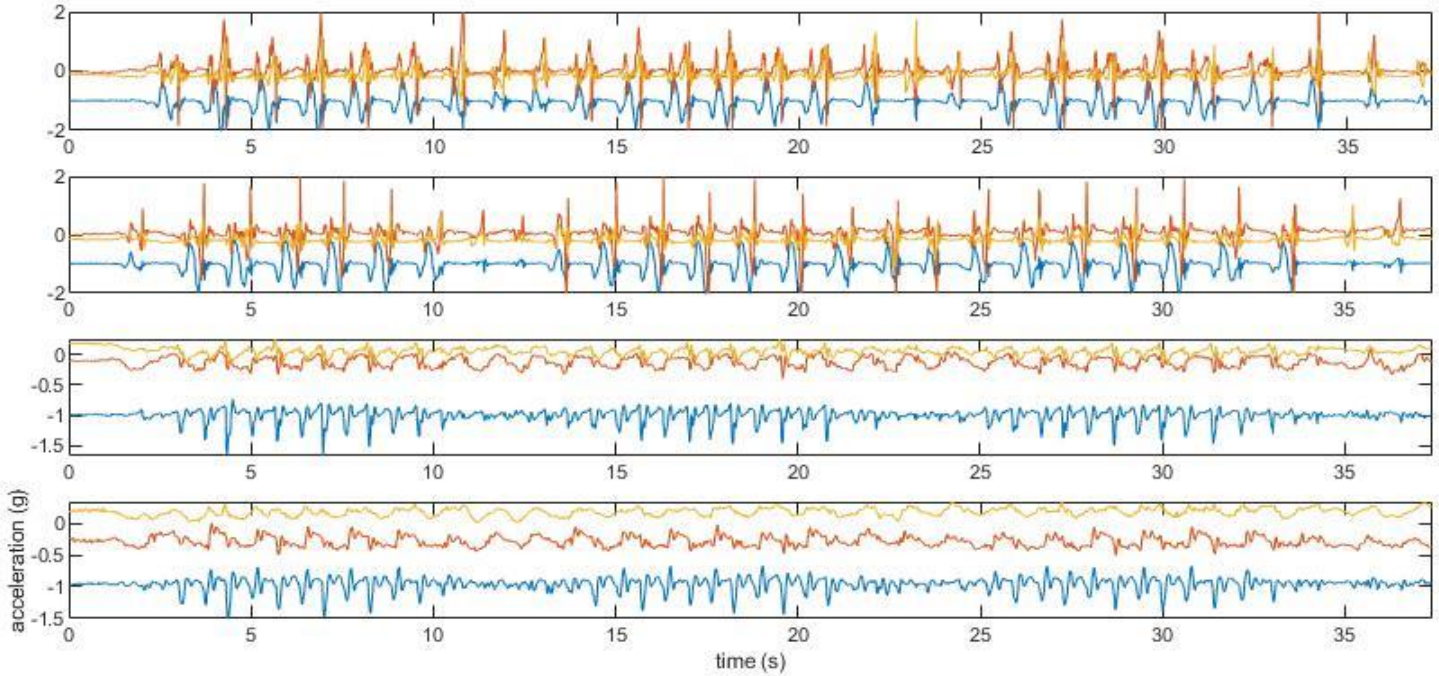
Tripod

4 sensors





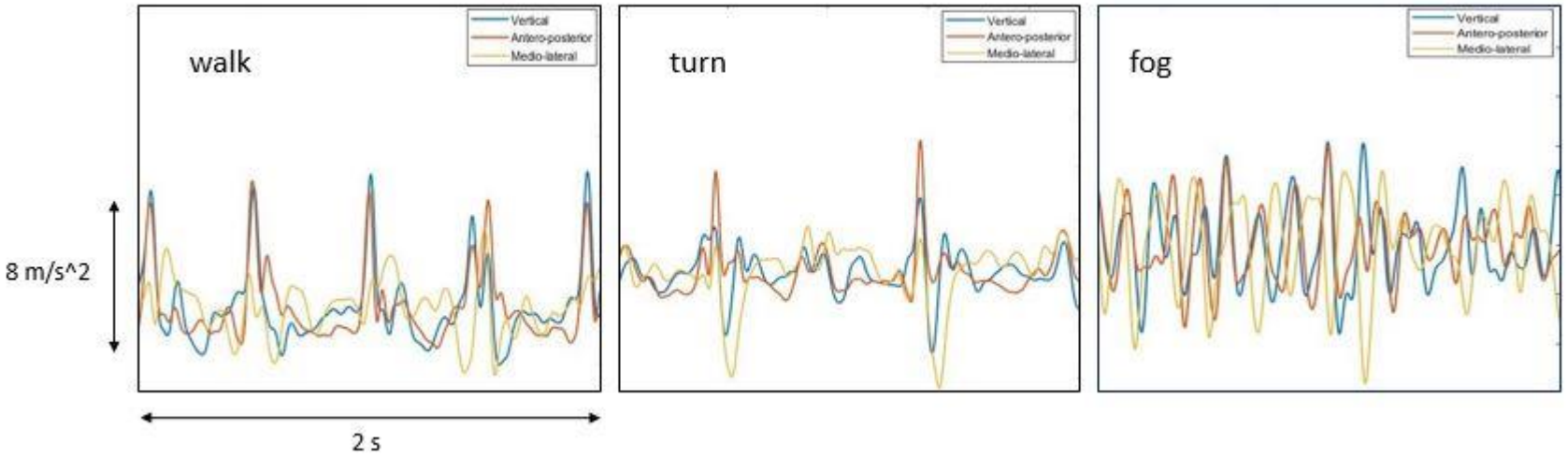
Body Sensor Network



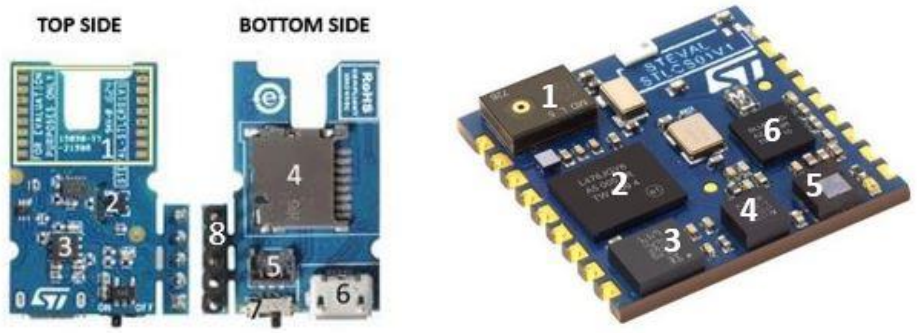
Smartphone

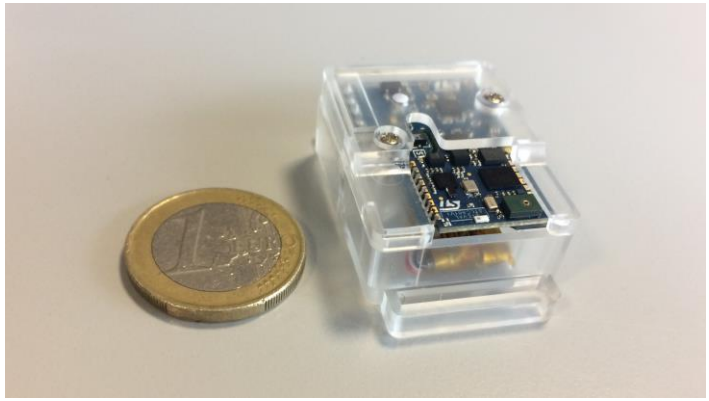

x
y
z

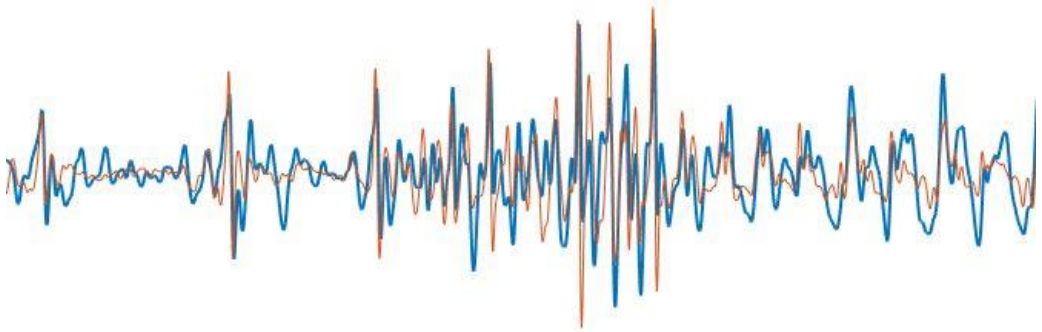

x
y
z


walk
turn
fog
Vertical
Antero-posterior
Medio-lateral
8 m/s^2
2 s

Tiny sensor







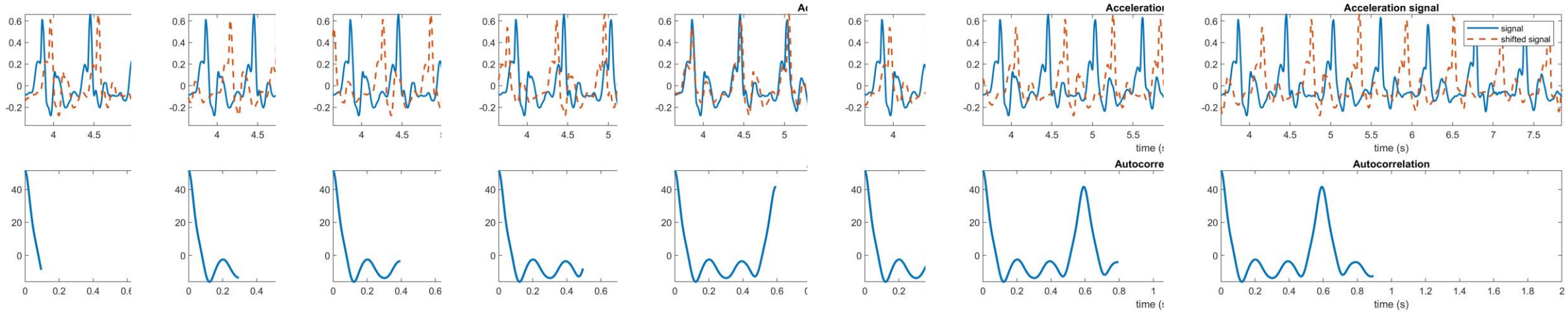
Smartphone


Proximity sensor
Ambient Light Sensor
CMOS Imager sensors
GPS sensor
Accelerometer
Humidity sensor
Microphone
Temperature sensor
Pressure sensor
Fingerprint sensor
Magnetometer
Gyroscope
Touch sensor

Auto-correlation

Cross-correlation is a mathematical operation used to measure the similarity between two signals as a function of the relative displacement of one signal compared to the other. You can use auto-correlation to analyse a one-dimensional signal.

$$\sum_{n=-\infty}^{\infty} x[n] * x\,[n+\tau]$$



Auto-correlation

Cross-correlation/auto-correlation can be a fast, easy, and effective method for providing a first evaluation of signal patterns.
In gait analysis, gait regularity, symmetry, and pace can be assessed.