

Metropolia Proof Health Preclinical study case

Business Finland Health Tuesday 1.6.2021

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Need – blood pressure monitoring



(Invasive and) continuous

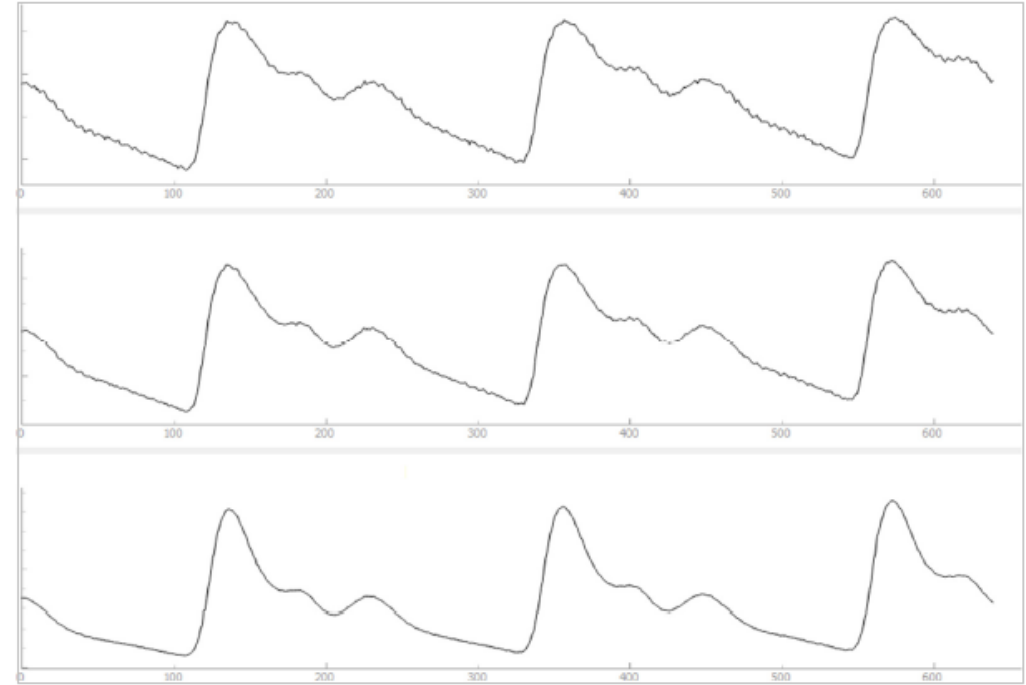


Non-invasive (and non-continuous)

Approach



Continuous wrist pulse wave based blood pressure monitoring



Pulse wave data matched to reference measurement with machine learning algorithms

Preclinical study at Metropolia (2020)

Eklund & Jaatinen: Data collection for AI based continuous blood pressure monitor development. (in Finnish). Bachelor Thesis. Metropolia University of Applied Sciences. 2020.

Theresa Eklund, Tiina Jaatinen

Datankeräys tekoälypohjaisen ja jatkuvatoimisen verenpainemittarin tuotekehitystä varten

Metropolia Ammattikorkeakoulu

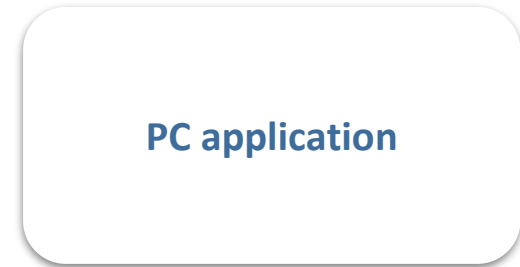
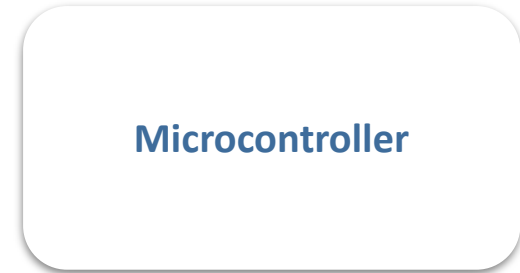
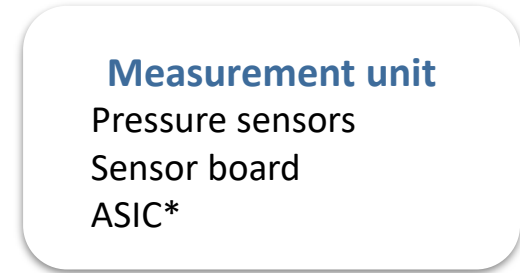
Insinööri (AMK)

Hyvinvointi- ja terveysteknologia

Insinöörityö

15.5.2020

Murata Blood Pressure Monitor Prototype



*Application Specific Integrated Circuit

Research Methodology



Theoretical Framework

Adequate theoretical information of research ethics and blood pressure.



Research Ethics

Ethical review. Research permits. Informed consent.



Subject Recruiting

Companies, Health Care Units, Social Media, Metropolia UAS, Posters, Flyers.



Data Collection

Pulse wave data (prototype and reference). Personal details. Observation.



Research Statistics

Personal parameters and properties (age, weight, height, gender, blood pressure). The number of subjects.

Research Equipment



15 min
simultaneously

+



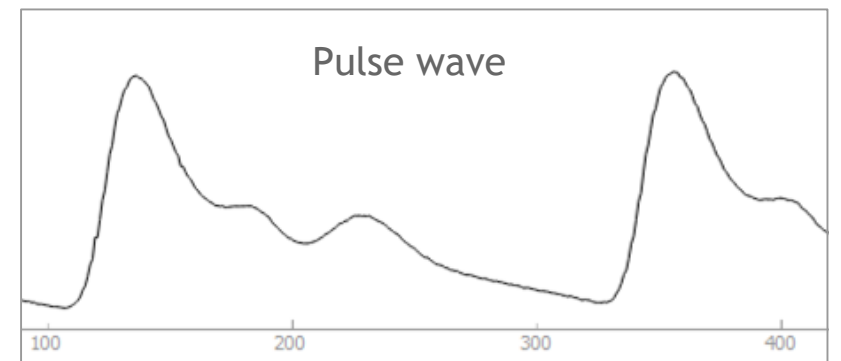
CNAP Monitor 500 HD

- Continuous
- Noninvasive
- Finger

Murata Prototype

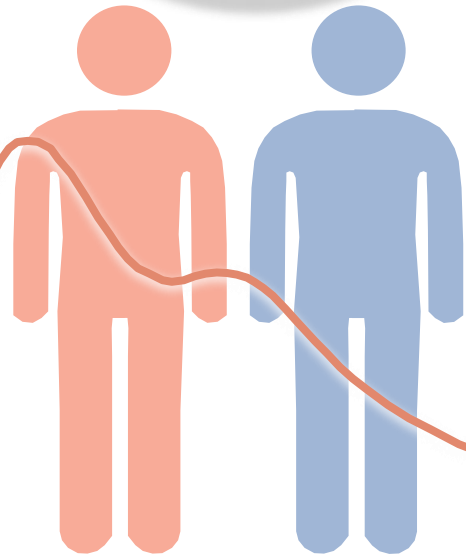
- Continuous
- Noninvasive
- Wrist

Measurement Setup



Research Results

253
subjects



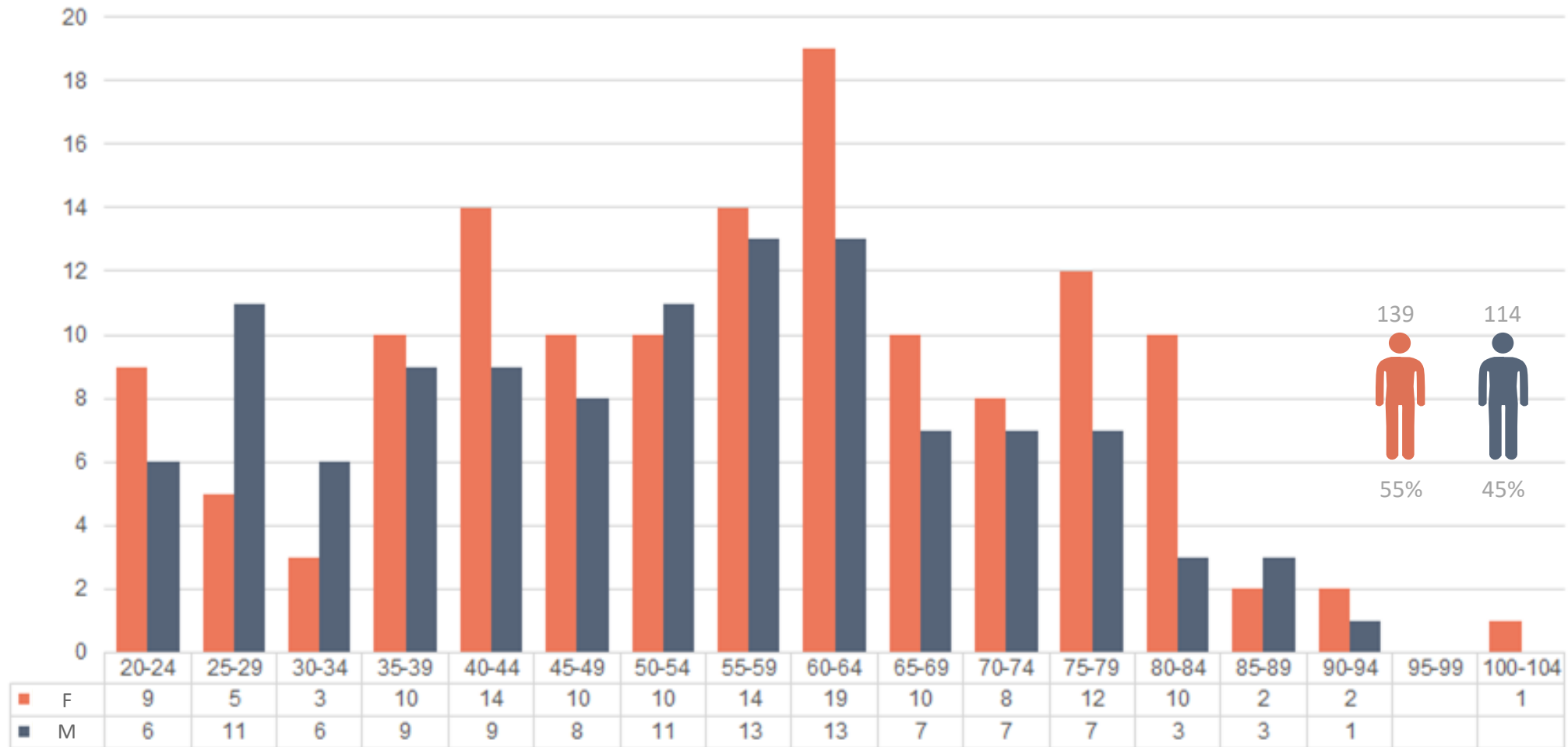
Diverse
data

222
551
pulse waves

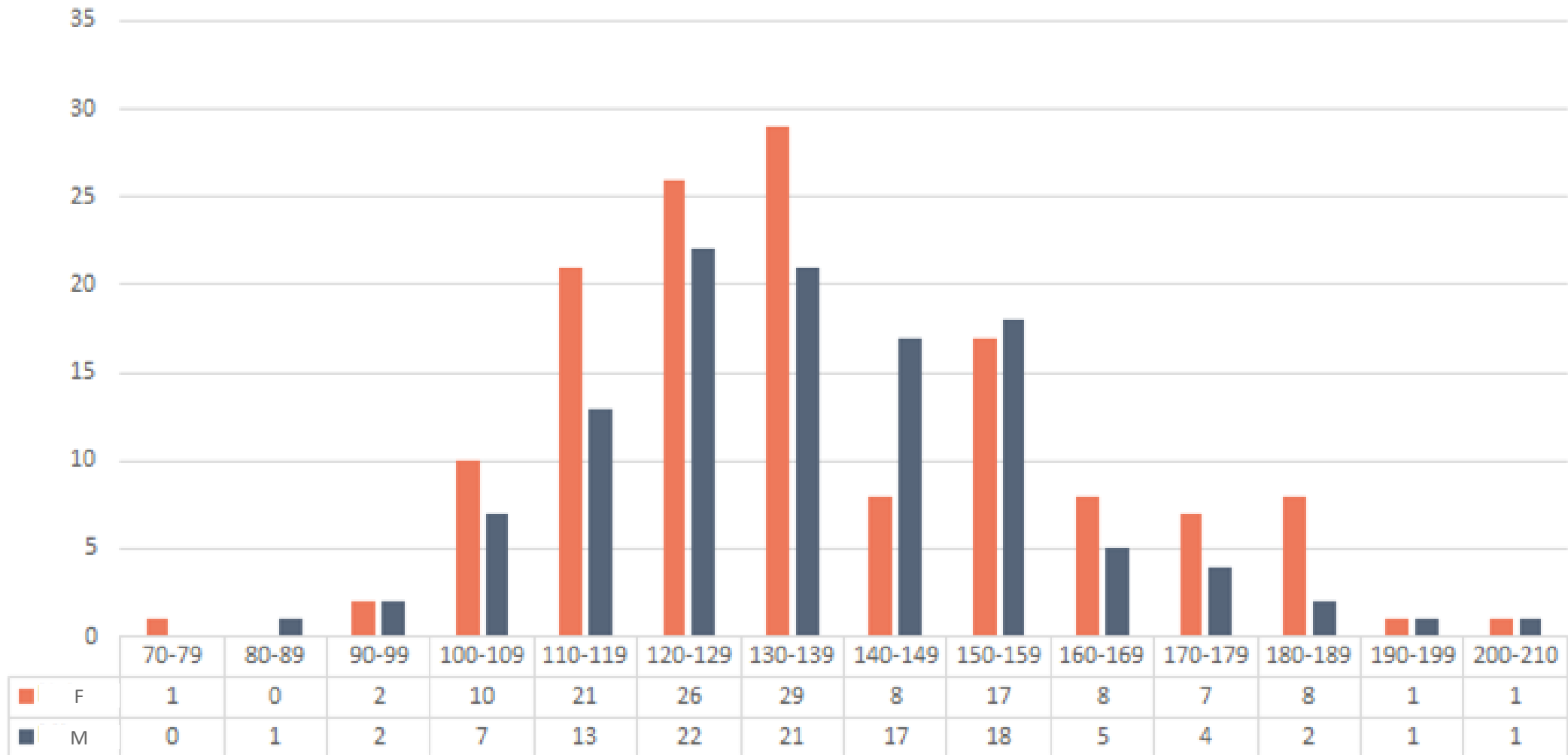
34%
Improvement
in accuracy*
*of diastolic blood
pressure

93%
usable

Number of Subjects by Age Group



Distribution of Systolic Blood Pressure



Metropolia Proof Health:

Research infrastructure services designed for pre-clinical product development and research.

Testing

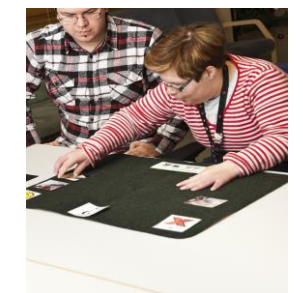
Piloting

Validating



Metropolia Myllypuro Campus Proof Health Excellence centers

Movement and lower limb, Hospital (Operating room, ICU), Biomedical laboratory, Radiography and radiotherapy, Optometry, Oral, Home environment & Sensory Room



Contacts

- [Blood pressure monitoring project](#)
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