A-WEAR PROJECT

A network for dynamic WEarable Applications with pRivacy constraints

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Short Report

"List of crowdsensed parameters and additional specifications from wearables"

Editor/Lead beneficiary (name/partner):	Joaquín Torres-Sospedra / UJI
Internal reviewed by (name/partner):	Darwin Quezada / UJI
Reviewer (name/partner)	Simona Lohan / TAU Aleksandr Ometov / TAU

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Abstract

This document presents the list of crowdsensed parameters and additional specifications from wearables to support Milestone ML3.1

Disclaimer

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

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"List of crowdsensed parameters and additional specifications from wearables"

Three ESR's and their supervisors have been working on their research plan contributing with the definition of the parameters required for crowdsensed and collaborative positioning services.

Lucie Klus (ESR02) has contributed to this milestone by publishing the paper "Crowdsourcing solutions for data gathering from wearables," in Proc. of the XXXV Finnish URSI Convention on Radio Science [1]. Her work has not only provided a review on open-source and proprietary data repositories, but it has also identified some open relevant questions related to crowdsourced data from wearables. In her latter analysis, four dimensions (parameters) have been explored - namely data collection, data storage, data processing and data transmission – in order to cope with large data sets and low energy consumption in wearable devices, while ensuring the integrity and quality of the collected data.

Darwin Quezada (ESR05) is finishing his first journal paper with a systematic review on on-line positioning platforms for IEEE Internet of Things journal. He has already identified 13 relevant publicly-available (see Table 1) and 106 private positioning platforms. His analysis on the platforms includes different relevant dimensions -namely technologies, techniques & methods, network architecture, standardization, evaluation, license, communications protocols and main target/objective of the platform-. The interoperability of heterogeneous open positioning platforms is desiderable to enable collaborative positioning.

Table 1: List of available open on-line positioning platforms

mapsindoors	**https://www.mapspeople.com/mapsindoors/**
Cisco DNA Spaces	https://www.cisco.com/c/en/us/solutions/enterprise-networks/dna-spaces/index.html
intermodalics	https://www.intermodalics.eu/indoor-positioning
Meridian	https://meridianapps.com/
Infsoft	https://www.infsoft.com/
Indoorlocation	https://www.indoorlocation.io/
FIND3	https://www.internalpositioning.com/
Anyplace	https://anyplace.cs.ucy.ac.cy/
Indoo.rs	https://indoo.rs/
Here	https://www.here.com/products/tracking-positioning-solutions/indoor-positioning-systems/
Polestart	https://www.polestar.eu/
Sewio	https://www.sewio.net/
Pozyx	https://www.pozyx.io/

Pavel Pascacio (ESR06) has submitted to IEEE Access a systematic review on collaborative positioning. His work is providing a comprehensive review on all the works explicitly dealing with Collaborative Indoor Positioning Systems for human use (e.g., using smartphones or any other wearable device). The review has studied the CIPS not only in terms of technologies, techniques and methods for positioning, but also on the specific architecture, infrastructure and evaluation procedure required for them. The work concludes with the most promising future avenues, which include: exploiting sensor fusion at the non-collaborative and collaborative parts; considering device and technology diversity in the CIPS architecture; enhancing the security and privacy of the positioning systems and LBS; and defining a more comprehensive evaluation setup that considers multiple realistic scenarios (either through empirical experiments and/or by creating new open-available datasets).

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[1] L Klus, ES Lohan, C Granell, J Nurmi. “Crowdsourcing Solutions for Data Gathering from Wearables”, Proceedings of XXXV Finnish URSI Convention on Radio Science

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