Proposal for Master's Degree Project

Title: An Internet of Things (IoT) Network for Predictive Health in Smart Home Environments

Supervisor

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Summary

The advent of smart environments, smart transportation and smart buildings using wireless sensor technologies and cloud communications services have presented major findings in e-Health. These technologies and "things" interconnected, automated and self-sustained are now named, Internet of Things (IoT) [1].

The main goal of this Master dissertation work is to build and deploy an IoT ecosystem in smart home environments that integrate and use wireless sensors, such as, humidity, temperature, CO, CO2, pressure and presence to extract location a context-based data of a person inside the house. The goal of this ecosystem is to create a true predictive and adapting home environment aiming the person health and comfort. Moreover, this work includes a 4 months of real pilot tests. It is expected that a machine learning tool is used for data analysis and performance evaluation. This work has the support of the C. Municipal do Fundão that is partner in the real pilot test.

Expected outputs (mandatory/minimum):
- 1 article in indexed journal;
- 1 MsC dissertation.

Main Goals and timeline

- **Task1:** Review of the state of the art on predictive health and Internet of Things (IoT).
- **Task 2:** Construction of the IoT based ecosystem and its deployment at a real smart home or living lab.
- **Task 3:** Real Pilot test deployment and data analysis of collected data.
- **Task 4:** Writing of the master's dissertation, technical documentation and a journal paper.

Timeline:

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Task1: Review of the state of the art on predictive health and Internet of Things (IoT)												
Task 2: Construction of the IoT based ecosystem and its deployment at a real smart home or living lab												
Task 3.1: Real Pilot test deployment												
Task 3.2: Data analysis of collected data												
Task 4: Writing of the master's dissertation, technical documentation and a journal paper.												

References:

[1] João Santos, Joel JPC Rodrigues, Bruno MC Silva, João Casal, Kashif Saleem, Victor Denisov, "An IoT-based Mobile Gateway for Intelligent Personal Assistants on Mobile Health Environments", in Journal of Network and Computer Applications Volume 71, August 2016, Pages 194–204.