

Proposal for Master's Degree Project

Title: Performance Evaluation of the Use of Blockchain on Mobile Health data

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Summary

The advent of mobile health (m-Health) services and technologies is changing people's lives for the better, especially for disabled, elderly, and chronically ill people. M-Health proposes to deliver healthcare services, anywhere, anytime and anyhow, surpassing geographical, temporal and even organizational barriers [1]. However, mobile devices present several constraints, such as processor, energy, and storage resource limitations. The constant mobility and often-required Internet connectivity also exposes and compromises the privacy and confidentiality of health information. Because of this, research on security related aspects is mainstream in m-Health scenarios, with many solutions being proposed in the specialized literature addressing different security or privacy concerns.

The hype surrounding blockchain is sometimes hiding the real usefulness of the technology on many areas, namely on management of health records. The main goal of this MsC dissertation is to study the usage of blockchain on mobile health (m-Health) data and identify and clarify where the technology can really benefit this area. The goal is also to design and implement a prototype of a blockchain solution for managing Health related data, though the type and purpose of data is yet to be defined. The work will then include laboratory evaluations using real data and assume a (controlled) real test pilot deployment.

The main research challenges are to precisely describe the usefulness of blockchain in this context, and how it can be adequately used; to identify the types of data and scenarios it should be applied to and to assess the limitations of the technology in constrained devices in those particular scenarios.

Expected outputs (mandatory/minimum):

- 1 prototype of a m-Health system using blockchain technology;
- 1 article in indexed journal;
- 1 MsC dissertation.

Main Goals / tasks

- **Task1:** Review of the state of the art on m-Health and blockchain; comparison of existing applications of the technology in the field.
- **Task 2:** Specification of data types and scenarios where blockchain can be applied in the context of Mobile Health;

- **Task 3:** Design and implementation of a prototype of a blockchain based solution for health data in mobile devices;
- **Task 4:** Performance Evaluation of the prototype;
- **Task 5:** 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
Task 1: Review of the state of the art on m-Health and blockchain; comparison of existing applications of the technology in the field												
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Task 5: Writing of the master’s dissertation, technical documentation and a journal paper.												

References:

[1] Bruno M. C. Silva, Joel J. P. C. Rodrigues, Isabel de la Torre Díez, Miguel López- Coronado, and Kashif Saleem, “Mobile-health: A review of current state in 2015”, in Journal of Biomedical Informatics, Vol. 56, pp. 265-272, 2015.