

Senior Honours Project's Abstract

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Project Title Energy-efficient sensing with Android smartphones

1 Description

Context-aware mobile applications which exploit heavy-energy sensors(e.g. GPS) has grown in popularity in the recent years. As users tend to spend more time in those applications, battery life becomes crucial issue for mobile phones. In order to limit inconvenience for users, the usage of sensors could be optimized. Context-aware mobile applications could use sensors more energy-efficiently without any negligence in data accuracy(e.g. using cheaper sensors where possible such as preferring an accelerometer to an 802.11 radio).

2 Objectives

This project aims to create an energy-efficient sensing library, which will provide an API for mobile applications. As a proof of concept, I intent to develop a test mobile application, which will make use of this API. Moreover, the project should satisfy a following set of requirements:

(a) Primary requirements

- All software components of the project will work on Android mobile operating system.
- Energy efficiency and accuracy of the library should be tested against a baseline implementation.
- The project is required to determine empirically energy cost of different sensors.
- The library will be integrated with ESM mobile application
- As part of the project, real users study with the test application should be conducted.

(b) Secondary requirements

- The library will provide online feedback on energy cost of different sensors.
- Software components are expected to work on a variety of Android devices.
- The library should adapt its energy saving algorithm according to current battery life.
- The library intents to manage mobile applications' contention for sensor usage.

(c) Tertiary requirements

- The energy saving algorithm is expected to improve its performance by learning on user behaviour.

3 Ethics

WE ARE GOING TO DISCUSS IT ON NEXT MONDAY I ASSUME, AREN'T WE? Martin

4 Resources

In order to complete the project, the variety of Android devices is in need. Since being enrolled for CS4303 Video Games, I will be given Google Nexus 7 for the first semester. I would like to ask for the possibility of using it across the second semester as well. Tristan has already equipped me with HTC flyer 7 inch and will provide me with any additional devices if requested.