

Energy consumption estimation in Android applications



The estimation of energy consumption in modern Android embedded devices is critical in order to evaluate the effectiveness of energy optimization techniques. Many estimation approaches have been proposed, which vary in terms of accuracy, imposed overhead and requirements. The objectives of this thesis are:

- To **survey and evaluate existing approaches** in energy consumption estimation (application software-based, sensor-based, hybrid, etc.). The approaches will be classified based on selected criteria (e.g. accuracy, applicability, requirements, overhead). This work is expected contribute to a relevant survey publication.
- To monitor the energy consumption of an **industrial smart-glasses real-time application** running on an Android platform. Various approaches will be used and the advantages/limitations of each one will be evaluated in practice. Cooperation with software industry is expected for the successful completion of this objective.
- **Extending one or more exiting approaches** to address limitations in terms of accuracy, overhead etc. or **developing a novel approach**. Leveraging advanced machine learning techniques will be considered. The work in the context of this objective is expected to contribute to a relevant publication in an embedded systems conference.

The duration of the thesis is 8-12 months and will finish when all three objectives described above will be completed successfully. The student will contribute to one or two publications, based on objectives 1 and 3 and is expected to participate in discussions/teleconferences due to close cooperation with the software industry in the context of this work.

Contact:

Lazaros Papadopoulos: lpapadop@microlab.ntua.gr

Charalampos Marantos: hmarantos@microlab.ntua.gr

Christos Lamprakos: cplamprakos@microlab.ntua.gr