Thesis project – MSc / BSc level

Title: WebAssembly for embedded sensor systems

WebAssembly (WA) is a new standard for fast execution of code on the web. It is designed to speed up web applications by replacing JavaScript for the critical parts of a program. WA is standardized by the World Wide Web Consortium (W3C) and there is already support for it in major web browsers, such as Mozilla Firefox, Microsoft Edge, Apple Safari, and Google Chrome. WebAssembly is a light-weight stack-based virtual machine (VM). It can be embedded in webpages where it can execute code instead of JavaScript or together with other JavaScript code. However, WebAssembly can also be embedded elsewhere, such as on resource-constrained embedded Internet of Things (IoT) devices.

In this thesis project, the student will work on designing and implementing WebAssembly tools and execution engines for embedded sensor node hardware systems, such as Texas Instruments SensorTag/Launchpad, BBC Micro:bit, Espruino puck.js, etc. The aim is also to create a web-based online tool for developing and testing WA programs and then support the deployment of the finished code to real sensor hardware.

This thesis work will be based at KTH Flemingsberg in the division of Health Informatics. The work will be used in digitalization of health and wellbeing. There is also the possible to validate the result in ergonomics or sports.

This activity can be offered as either a master and a bachelor thesis project. We can accommodate up to two students. The starting date is flexible.

Application information

If you are interested in this project, please contact the supervisor by e-mail at: martin.jacobsson@sth.kth.se