TrustEYE

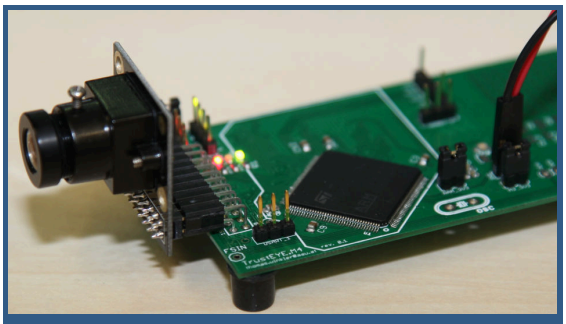
Trustworthy Sensing and Cooperation in Visual Sensor Networks

The Pervasive Computing Group is looking for a student from the field of Information Technology or Computer Science for a **research project** or a **Bachelor / Master thesis** entitled:

Integration and Evaluation of Wifi and Ethernet on an ARM-based Microcontroller System

This work will be performed as part of the TrustEYE research project. Background information about the TrustEYE project and its goals can be found at http://trusteye.aau.at

Work Description



Prototype of an ARM-based visual sensor node.

In many microcontroller (uC) applications a wired or wireless communication channel is required to send or receive data. Due to its omnipresence, **WiFi** (802.11) is gaining importance in the microcontroller domain. Recently, a number of WiFi chips have been released which are specifically designed for use with uCs. These chips are typically connected via the **SPI bus**. A central part of this project / thesis will be a review of existing solutions and an evaluation of their performance. **Power consumption** and real-world data rates are primary evaluation criteria. Practical aspects include the implementation of drivers and a communication framework for the uC, proof-of concept applications (e.g., video streaming) and power consumption measurements. A complementary or alternative topic is the implementation of an Ethernet interface for the uC. The chosen platform features and onboard **Ethernet MAC**. Adding an external PHY to a Cortex M4-based system and porting a **lightweight IP stack** would be central topics of this work.

Required Skills:

- C/C++

Desired Skills:

- Basic experience with microcontrollers
- Basic experience with network protocols
- Linux (host development system)

XBEE WiFi Module

Contact:

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NUS National University of Singapore

KWF Kärntner Wirtschaftsförderungs Fonds

FWF Der Wissenschaftsfonds.

Investition in Ihre Zukunft
EFRE Europäischer Fonds für regionale Entwicklung
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