

Department of Electrical Engineering and Computer Science

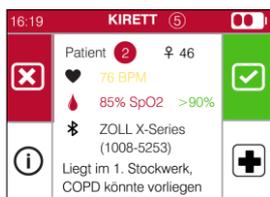
Institute of Knowledge Based Systems and Knowledge Management Chair for Embedded Systems

Computer Science / **Computer Science (Embedded Systems)** / Medical Informatics / Mechatronics

Bachelor Thesis (4 Month) / Master Thesis (6 Month)

Conceptual design and implementation of an interactive Wearable GUI using the TE0802 FPGA (C++)

We are looking for *two* motivated and committed students for a bachelor or master thesis in the field of FPGA and embedded software development. The theses will be carried out in collaboration with the company CRS Medical GmbH (Aßlar) and involve the development of an interactive user interface using C++ programming in Xilinx Vitis with the TE0802 FPGA.



Tasks (depending on degree) include:

- Literature work on interactive Graphical User Interfaces (GUI) and their UX aspects, wearable development frameworks, standards and best practices.
- Design and implementation of an interactive user interface for an FPGA
- Development of the C++ code using Xilinx Vitis for FPGA programming
- Integration of the user interface into the existing hardware (TE0802 + Digilent Pmod MTDS)
- Testing and optimizing the user-friendliness and functionality of the interface

Requirements:

- ✓ Preferably, profound knowledge of digital circuit technology and FPGA programming
- ✓ Experience in programming with C++
- ✓ Good knowledge of user interface development
- ✓ Independent and careful working style
- ✓ Very good German or English skills

All required resources (Hardware, Software and Tools) are provided as part of the work.

Background: The work takes place in the context of the KIRETT (Künstliche Intelligenz bei Rettungseinsätzen zur Verbesserung der Erstversorgung) project. With the help of a wearable, rescue operations are to be improved by artificial intelligence in the recognition of situations and selection of instructions for action.



Together with CRS Medical GmbH, we offer an exciting and practical bachelor or master's thesis in an innovative company, the possibility for independent work and responsible implementation of the project. A combination of the thesis with a working student position (e.g. 10-20hr/week) is possible. If you are enthusiastic about this challenge and meet the required qualifications, we look forward to receiving your application with the usual documents (cover letter, CV, certificates, etc.) by E-Mail.

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