



Students in Medical Engineering (Medizintechnik / Informatik)

Master Thesis

Topic: Design and Implementation of a Roster Scheduling Software for Clinical Use at the ENT department

An optimized duty roster is an essential prerequisite for a time- and cost-efficient deployment of personnel in a hospital. It is critical to ensure that patients receive the best possible treatment by the most qualified personnel. Scheduling for the duty roster is affected by a diverse range of factors. Stations require differing expertise, workflows and specific skills. On the other hand, scheduling for the duty roster has to consider multiple requirements associated with the residency training program. A software-based tool to this problem can help finding an optimal solution.

To this end, the thesis will first comprise a **requirements engineering phase**, where in exchanges with the medical faculty (Prof. Hornung and Prof. Wurm) the clinical requirements (functionality, access and GUI) will be established. This will follow a coarse-to-fine approach, where requirements are successively refined and adapted.

Subsequently, in the **development phase**, the defined requirements will be implemented in a modular software tool. Key aspects of the tool will be instant access to the current duty roster, the possibility of time-critical changes due to, e.g., sick days and a database backend to ensure robust, consistent and flexible access. This task will be supervised by Prof. Döllinger. **The official Master Thesis supervision is enabled by Prof. Döllinger as member of Technische Fakultät and member of Medizinische Fakultät.**

Overview: The thesis encompasses requirements engineering and development of a software-based (C#/.NET with a database backend) tool for duty roster management meeting the needs of the ENT department, where it will then be deployed. The work is going to be performed at the ENT hospital, University Hospital Erlangen, Waldstrasse 1.

What we expect:

- Very good programming skills in an object-oriented language (preferably C#/.NET)
- Basic knowledge of database systems
- Structured working practice and analytical mindset
- Very good communication skills

Tasks:

- Design and requirements engineering of a duty roster tool meeting clinical requirements
- Implementation in C# (using Visual Studio and WinForms/WPF)

Contact:

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