

# FAKULTÄT FÜR INFORMATIK

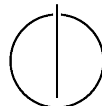
DER TECHNISCHEN UNIVERSITÄT MÜNCHEN

Bachelor's Thesis Proposal in Informatik

Further development of Tutor Management  
Application: Systematic Optimisation  
including System testing and Implementation  
of Student Facing Features

Weiterentwicklung der Tutor Management  
Applikation: Systematische Optimierung  
inklusive Systemtest und Implementierung von  
studierendenorientierten Features

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# 1 Introduction

With the increasing number of students of the Faculty of Informatics and Mathematics at TUM, managing tutorials for all students became a massive problem for the GBS management teams. Starting from last semester, GBS management teams switched to the GBS tutoring tools for organizing the tutors.

## 2 Problem & Motivation

Base on the structure of the GBS tutoring tools, GBS management teams proposed a new tool called Tutor Management Application that is used for the management team to automate the daily tutorials management routine and also serves as a portal for communication between tutors and managers. However, The development strategy we are currently using is still immature:

1. The profiles switching between the development environment and production environment must be done manually by the developer every time they pull from the remote branch, which is a vast overhead.
2. The deployment of the system to the server is a complicated process and has to be done manually, increasing the probability of encountering errors.
3. The system uses an SQLite database which is not suitable for the production environment. As it cannot hold high concurrency and data is stored as an insecure file.

TMA has already implemented most functionalities for managing tutorials, but distributing tutorials to tutors based on their preference is still missing. With this feature, the entire process of organising tutorials can be done on this application, which will increase efficiency and apply to other courses at TUM.

Other than the systematic optimisation, the current version of the TMA is only available for tutors and the management team. However, most of the course — the students cannot be benefited from this tool. With the functionalities like these features, students will be informed if tutorials are cancelled, moved, etc., enhancing the communication between the GBS team and the student.

### 3 Schedule

#### **Early May - Mid May:**

##### *SE Development*

- Design the docker file and the new system structure
- Design the new setting.py for automatically switching between development and production
- Design the CI/CD piple with a testing stage

#### **Mid May - End May:**

##### *SE Development*

- Migrate to the new, dockerlized service architecture
- Migrate the exsiting database to the PostgreSQL

##### *Thesis*

- Literatur Research, write introduction part of the thesis

#### **Early June - Mid June:**

##### *SE Development*

- Migrate the current LDAP search tree to the newer verison
- Finish the authentication system for permitting students accessing system
- Create an authorization system for isolating the content for different user type

##### *Thesis*

- Write second chapter of back ground

#### **Mid June - End June:**

##### *SE Development*

- Design and implement the new database structure for the students facing features
- Implement the backend services logic for the students facing features

#### **Early July - Mid July:**

##### *SE Development*

- Design and implement the database structure for tutorials distribution
- Implement the front-end UI for the students facing features

*Thesis*

- Write third chapter of related work

**Mid July - End July:**

*SE Development*

- Implement the services logic for tutorials distribution
- Start adding unit tests for the backend

*Thesis*

- Write fourth chapter of requirement analysis

**Early August - Mid August:**

*SE Development*

- Add Unit tests and E2E tests of the front end
- Write Documentation and finish up system

*Thesis*

- Write fifth chapter of system design

**Mid August - end August:**

*SE Development*

- Prepare presentation and finish up thesis

*Thesis*

- Write the summery chapter

**Early Spetember - Mid Spetember:**

- Hand in thesis
- Prepare for Presentation
- Bachelor Kolloquium