Lab Course / "Praktikum":
Project Management and Software Development for Medical Applications

Introduction – WS2020

Conducted by:

Ardit Ramadani, Javier Esteban, Mohammad Farid Azampour and Zhongliang Jiang

Prof. Dr. Nassir Navab - CAMP

Munich, 2 November 2020

Technische Universität München

JOHNS HOPKINS
WHITING SCHOOL
of ENGINEERING

Work with clinicians on real-world medical applications

Improve your project management and presentations skills

Lecture Structure

- **4 lectures** by course tutors
  - Introduction (Administrative, Requirements, Grading)
  - Project Management & Presentation Tips
  - Introduction to Software Engineering - Unified Modeling Language (UML)
  - Introduction to Software Engineering - Documentation, Tests, Design Patterns & Integration Strategy

- **3 presentations** by students
  - Kick-off / Requirements (5 mins)
  - Intermediate (7 minutes)
  - Final (with demo) (7 minutes)

CoVid-19 related announcements

- Due to the CoVid-19 outbreak and subsequent government measures, short term changes might be necessary
    - Follow the announcement section on the website of the course
    - Check emails regularly

- As of today (2 November 2020) we are planning
    - Purely virtual lectures and presentations conducted via TUM Zoom
    - Zoom details will be provided one day before the sessions via email
    - Presence might be required by supervisors depending on the Project
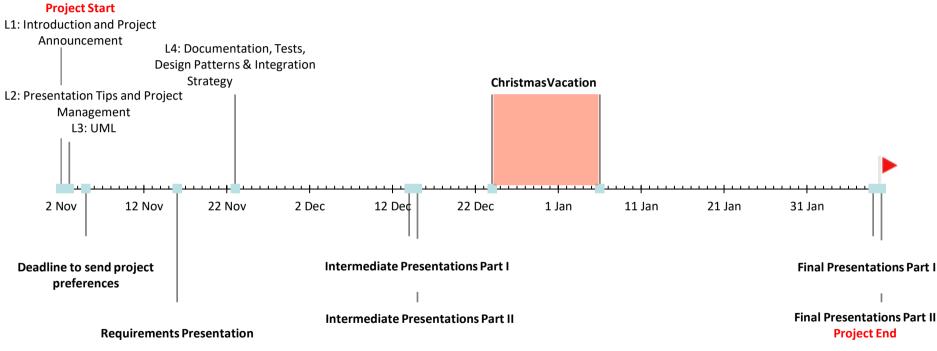   - Not guaranteed 100% online course

Schedule

Date	Time	Place	Topic	Conducted by
Monday, 02.11.2020	10:30 - 12:00	Zoom	Lecture 1: Introduction and Project Announcement	Course tutors
Tuesday, 03.11.2020	09:30 - 12:00	Zoom	Lecture 2: Presentation Tips and Project Management Lecture 3: UML	Zhongliang Jiang Farid Azampour
Thursday, 05.11.2020	23:59 CEST	Email	Deadline to send project preferences	Seminar Participants
Monday, 16.11.2020	09:00 - 12:00	Zoom	Requirements Presentation	Seminar Participants
Monday, 23.11.2020	10:00 - 12:00	Zoom	Lecture 4: Documentation, Tests, Design Patterns & Integration Strategy	Ardit Ramadani
Monday, 14.12.2020	09:00 - 12:00	Zoom	Intermediate Presentations Part I	Seminar Participants
Tuesday, 15.12.2020	09:00 - 12:00	Zoom	Intermediate Presentations Part II	Seminar Participants
Monday, 08.02.2021	09:00 - 12:00	Zoom	Final Presentations Part I	Seminar Participants
Tuesday, 09.02.2021	09:00 - 12:00	Zoom	Final Presentations Part II	Seminar Participants

Timeline

Project Start
L1: Introduction and Project Announcement

L4: Documentation, Tests, Design Patterns & Integration Strategy

ChristmasVacation

L2: Presentation Tips and Project Management
L3: UML

2 Nov   12 Nov   22 Nov   2 Dec   12 Dec   22 Dec   1 Jan   11 Jan   21 Jan   31 Jan

Deadline to send project preferences

Intermediate Presentations Part I

Final Presentations Part I

Requirements Presentation

Intermediate Presentations Part II

Final Presentations Part II
Project End

Projects will be on Software Development in Medical Applications

- Involves "**Medical Application**" and "**Software Development**"
- In collaboration with **Hospital** or **Industry** or **Research Institute**
- In the previous years, example projects were based on:
  - Image Analysis (Registration, Segmentation, Quantification)
  - Graphical User Interface design
  - Mobile App Development
  - Robotics
  - Machine Learning, Deep Learning
  - Computer Vision
  - Image Reconstruction
  - Simulations and Modeling
  - Augmented Reality
  - Computer Graphics

You are Project Manager as well as Software Developer

- Make and follow your project **plan**
  - Gather requirements
  - Set goals and tasks
  - Derive milestones
  - Make Gantt chart (project time plan)

- **Design** and **implement** the software
  - Design patterns, use case and class diagram
  - Programming in higher level languages (C/C++, Python, Java, Matlab etc.)
  - Development tools like IDEs, version control (GIT) etc.

- Present your work to the **course** and **supervisors**
  - 3 presentations: Kickoff, Intermediate, Final (with demo)

Project Assignment

- Project proposals will be announced in the web-site of the course by **Tonight**
  - Send us your application with **3 preferred projects** and **motivation**
  - Find application form under **Downloads** > "**Student project application template**"

- We will try to assign students one project from their preferences
  - Maximize the number of students to assigned projects as their first choice

- Students must discuss the projects with their assigned supervisors as soon as possible
  - After the projects have been assigned

Grading

- This course has **10 ECTS**
  - Equivalent to **10 – 14 hours per week** for **3 – 4 months**
- **Project Supervisor** will grade based on performance (weight: **50%**)
  - Requirement coverage
  - Implementation on time
  - Completion of the project goals
  - Regular communication
- **Course Tutors** will grade based on presentations (weight: **50%**)
  - Fundamental requirements met (citations, correctness, formatting)
  - Presentation skills (get the message across)
  - Slides (proper layout of text and visual information)
  - Content (for example: introduction, software design, tasks, project management)

Please follow the course webpage or write to us if you have specific questions

- Website
  - https://wiki.tum.de/pages/viewpage.action?pageId=559284960

- Course tutors

Ardit Ramadani
ardit.ramadani@tum.de

Javier Esteban
javier.esteban@tum.de

Mohammad Farid Azampour
mf.azampour@tum.de

Zhongliang Jiang
zl.jiang@tum.de

Thank you

2 November 2020