BSA5-AK, BSA5-Prj WS 2019/2020	
Topic	**Full Stack Web Development**
Lecturer(s)	**Alija Sabic** (sabic@technikum-wien.at)

Short description

Full stack web development incorporates different technologies across all disciplines in web development (client, server, communication). This lecture is for web enthusiasts who are interested in developing a full stack web application - or integral parts of such - with a special focus on creating new and enhancing available AsTeRICS technologies and Assistive Technology (AT) solutions in general. And for those, who want to foster and improve their JavaScript skills (client, server).

It is suitable for intermediate developers with basic knowledge and some experience in web fundamentals (e.g., HTML, CSS, and JavaScript) with a vital interest in assistive technologies and web development.

The course will cover a brief (and broad) introduction in relevant subject areas. Starting with a quick recap of HTML, CSS, and JavaScript and an overview of different stacks (e.g. LAMP, MEAN, MEVN), we will explore a selection of frameworks used in front-end development, e.g., Vue.js, Bootstrap, Webpack. Additionally, protocols (i.e., TCP, UDP, TLS, HTTP), Browser APIs (e.g., XMLHttpRequest, SSE, WebSocket, WebRTC), web service (i.e., Ajax, SOAP, REST) and back-end technologies (i.e., Node.js, Java) - depending on the selected projects.

Finally, students will get to know the relevant technologies in more detail, as a preparation for their project (self-study with active guidance).

Organization

Overview of web development fundamentals and a selection of used technologies (AsTeRICS) - depending on the topics selected. Literature research, planning, design, and implementation of (full stack) web applications by students. Support by the lecturer.

Possible projects and bachelor theses (exemplary)

Web Service
- Accessibility Converter: Textfile (Outline, Text, Links, Images)
  - to PDF (PDF/UA)
  - to Webpage (WCAG)

- Accessibility Checker (PDF/UA, WCAG, …)
- ...

AsTeRICS Plugin (Java)
- Voice-Control (Alexa, Google Home, ...)
- Speech-Recognition
- AND, OR, ADD, SUB, ...
- GROUP
- ...

AsTeRICS Solution (JavaScript, AsTeRICS Model)
- Camera-Mouse
- P2 Parser (bioelectric amplifier)
- ...

AsTeRICS WebACS (JavaScript) • Model Editor (Visualization) • Plugin Creation Wizard • ...
AsTeRICS Webpage • Accessible Search Field • ...
Further topics and examples can be found here: https://es.technikum-wien.at/embedded_systems_public/project-ideas/wikis/at-smarthome-topics
Motivation and new ideas are very welcome! :)

Remarks
The goal of theses in this area is a strong practical work and implementation of prototypes in the laboratories of the faculty of electronic engineering. Depending on the topic, existing work can be expanded.

Possibly available traineeships (Praktikumsplätze) for SS2020	1