MASTER'S THESIS ASSIGNMENT

I. Personal and study details

Student's name: **Poluektova Anel** Personal ID number: **516433**

Faculty / Institute: **Faculty of Electrical Engineering**

Department / Institute: **Department of Measurement**

Study program: **Intelligent Buildings**

II. Master's thesis details

Master's thesis title in English:

Voice assistant for controlling the reclining bed

Master's thesis title in Czech:

Hlasový asistent pro ovládání polohovatelné postele

Guidelines:

The aim of the work is to design and implement a module for voice control of an electrically adjustable bed. The users will be people with specific needs, for example wheelchair users.
Select an appropriate bed according to the results in previous projects in which a consultation with a target group of wheelchair users was carried out, the functional requirements for the bed and the voice assistant were defined, suitable components selected and a speech recognition module implemented.
Connect the voice control module to the bed and implement testing with users. Voice controlled bed:
- recognizes the trigger word,
- recognises at least 10 commands,
- requires command confirmation,
- gives feedback on the instruction,
- allows personalised recording of the command (specific pronunciation for people with disabilities),
- has a web interface for setup.

Test the reliability of the voice module on user commands. Create documentation for the solution and code to allow further expansion and modification of the solution. The bed installation and implementation are at the UCEEB research centre.

Bibliography / sources:

[1] Nedvěd, Jakub. Evaluace hlasových dialogových systémů. Plzeň, 2013. Bakalářská práce. Západočeská univerzita v Plzni. Dostupné na: http://hdl.handle.net/11025/10426
[2] Nurul Fadillah and Ahmad Ihsan, Smart Bed Using Voice Recognition for Paralyzed Patient, IOP Conf. Series: Materials Science and Engineering, 2020, DOI 10.1088/1757-899X/854/1/012045
[3] Kenichiro Noda, Google Home: smart speaker as environmental control unit, Disability and Rehabilitation: Assistive Technology, 13:7, 674-675, 2017, DOI: 10.1080/17483107.2017.1369589
[4] D. Wang and H. Yu, "Development of the control system of a voice-operated wheelchair with multi-posture characteristics," 2017 2nd Asia-Pacific Conference on Intelligent Robot Systems (ACIRS), Wuhan, China, 2017, pp. 151-155, doi: 10.1109/ACIRS.2017.7986083.

Name and workplace of master's thesis supervisor:

Ing. Vít Janovský Quality of Inner environment UCEEB

Name and workplace of second master's thesis supervisor or consultant:

Date of master's thesis assignment: **12.02.2024** Deadline for master's thesis submission: _____

Assignment valid until:
by the end of summer semester 2024/2025

Ing. Vít Janovský Supervisor's signature	Head of department's signature	prof. Mgr. Petr Páta, Ph.D. Dean's signature

III. Assignment receipt

The student acknowledges that the master's thesis is an individual work. The student must produce her thesis without the assistance of others, with the exception of provided consultations. Within the master's thesis, the author must state the names of consultants and include a list of references.

Date of assignment receipt	Student's signature