



Friedrich-Alexander-Universität
Erlangen-Nürnberg



Sub project / GAP (incl. sub projects): (A02), A03, A05, D02

Date and location: 10.05.2022, 13:00 (MS Teams)

Participants: Christian Carlowitz, Marius Schmidt, Stefan Brückner, Amelie Hagelauer, Aditya Gupta, Fabian Michler, Klara Capito, Lena Gmelch, Lydia Rupp, Misha Sadeghi, Robert Richer

Keeper of the minutes: Fabian Michler

Date and location for next meeting: 14.06.2022, 13:00 (MS Teams)

topic 1 –Overview of GAPV

content/description:

- Timeframe: Q2/2022 – Q3/2024
- Monthly meetings (2nd Tuesday each month, 1pm)
- Responsible author of meeting minutes will change monthly
- Scheduled steps of the GAP
 1. Facial muscle activity measured by state-of-the-art EMGs, proband study (D02)
 2. Facial muscle activity measured by EmpkinS EMG (A03) and EO-MBS (A05), proband study (D02)
 3. Investigation of body movements like nodding/shaking head by localization (A02, D02)

tasks and responsibilities:

- A02 – Development of a highly accurate beacon localization system
- A03 – Development of a miniaturized EMG sensor
- A05 – Development of an electro-optic microstructure- and micromotion-sensor
- D02 – Use of the developed sensor technology for biofeedback in depressed patients (study with about 190 participants)

topic 2 - Current status – A03

content/description:

- First single-channel EMG prototype is working (Jasmin Kolpak)
- Bluetooth interface and real-time data visualization available

- A03 will host an EMG workshop in July, details will follow; proposals/wishes for topics covered (technical or medical) are appreciated

tasks and responsibilities:

- Include battery pack (in progress) to make it fully wireless
- Proof of concept: Simultaneous EMG and beacon localization (scheduled May/June)
- Miniaturization and electrode selection (to be done during GAPV)

topic 3 – Current status – A05

content/description:

- Step 1 (intermediate solution)
 - Sensor worn on head (headband or similar)
 - Optical fiber points to a spot (approx.. 5mm diameter) on the facial skin
 - Tight fixture required (movement of head must equal the movement of the sensor)
 - Skin tension must not be affected by (large) EMG electrodes
- Step 2 (final solution)
 - Remote sensing system pointing to the facial skin from a distance of approx. 1-2m

tasks and responsibilities:

- Sensor development (see above)
- Time frame: first prototype by the end of 2022

topic 4 – Current status – D02

content/description:

- Evaluation of state-of-the-art EMGs, electrodes and measurement spots
- First results/discoveries
 - Emkins beacon must be as small as possible (including the electrodes)
 - Beacon must be clearly distinguishable from skin color
 - Forehead is not a good position for the beacon (contains important information on facial expression which is evaluated by the optical/visual measurement)
 - Emkins beacon design (housing, color, ...) should be similar to commercial EMGs so that the change from commercial EMG to Emkins beacon will not affect the outcome of the running study

tasks and responsibilities:

- Report desired shapes and positions for electrodes, discuss with A03
- Report pictures, positions and size of commercial equipment to A03, A05

topics for next meeting

- Progress reports of all sub-projects
- Coordination of further steps

Notes: -
