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GAP V

Date and location: Virtual, 10.05.2022

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

Keeper of the minutes: Misha Sadeghi

Date and location for next meeting: Virtual, 16.06.2022

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| **topic 1 – Introduction** |
| content/description: |
| * Topic: Analysis and validation of EMG measurement * A03: Prof. Hagelauer * A02: Prof. Vossiek * A05: Prof. Schmauss * D02: Prof. Berking, Prof. Eskofier |
| tasks and responsibilities: |
| * Steps   + Facial muscle measurement by state-of-the-art EMG   + Facial muscle activity measured by EmpkinS EMG and EO-MBS   + Investigation of body movements like nodding/shaking head localization * Open questions (A03)   + Placement of electrodes   + Number of electrodes/channels per nodes   + Number of sensor nodes: How many spots? |

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| **topic 2 – Introduction of other subprojects** |
| content/description: |
| * A05: Build a system that monitors an area of the skin (~100 pixels) and measures depth and velocity   + Important: What is the position of the head and where is the relevant skin patch located? (The system is remote)   + Idea: Headband with small box in it that can detect two points on the skin   + Aspects for A03 sensor design: Should not occlude too much skin/change the shape of the skin surface   + Sensors should not be stacked on top of each other * D02: Measurement of depression in facial expression and distinction of healthy and depressed participants   + Question: Are different electrode positions of commercial facial electrodes already tested? 🡪 Some preliminary dry runs and literature research on facial electrode placement  🡪 Findings so far: small electrodes are necessary since large electrodes hinder facial movement   + Important for D02: Colour of electrodes should remain the same and not be skin-coloured  🡪 Necessary for facial tracking through video  🡪 The sensors should only obstruct a very small part of the skin  🡪 A03 sensors will be molded into dental silicone which is the colour of the skin: Fabian will check whether the silicone can be coloured differently; plan B would be to but a different-coloured foil on top 🡪 Important face regions for D02: Forehead, area of the eyes, cheek area * Headband/helmet: Placement of a mirror in front of the forehead, which might be transparent and generates an optical beam. The box needs to be fixed on the head, but the optical cable could go down the back  🡪 Timeplan: Headband/helmet will be ready about by the end of the year 🡪 Movement of the person is not a problem if the device is really fixed to the head (but that might be problematic for the participant since it might be too uncomfortable/restrictive) |
| tasks and responsibilities: |
| * More detailed information of facial electrode placement: Send photos of electrode placement to Jasmin |

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| **topic 3 – EMG workshop** |
| content/description: |
| * Two-day workshop with Prof. Roberto Merletti and Alessandro Del Vecchio at the beginning of July |
| tasks and responsibilities: |
| * Let Fabian Michler know if there are any additional topics for the workshop |