Report on the outcomes of a Short-Term Scientific Mission[1]

Action number:

Grantee name:

Details of the STSM

Title: Expertise Transfer on XR and Eye Tracking Features as Indicators for Spatial Neglect Diagnosis and Training

Description of the work carried out during the STSM

Description of the activities carried out during the STSM. Any deviations from the initial working plan shall also be described in this section.

(max. 500 words)

The STSM was successfully carried out, arriving Sunday 25th October and departure the 30th October. Monday, started with meeting the hosts, a status meeting and discussions on eye-tracking hardware and showcasing XR software created by the hosts to calibrate eye trackers and capture eye behavior, pupilometry, and cognitive load. Tuesday, I refined WG1's systematic review LLM-powereed spreadsheet - it was extended with multiple category sheets and an overview sheet, which LLM was configured to traverse. I also participated in the core group meeting and a WG4 coordination meeting where synergies between WG1 Tools review and WG4 were discussed. In the afternoon, I met with a clinician who showcased how they used mobile eye tracking glasses with neglect patients, augmenting standard paper-and-pencil neglect tests with eye tracking.

Wednesday was dedicated to preparing the WG1 ST1 Tools review meeting, compiling a preliminary list of XR eye-tracking characteristics including hardware specifications, accuracy, calibration/verification procedures and data accuracy features. The Whack-A-Mole platform was prepared for pilot data collection. Thursday featured the WG1 ST1 Tools review meeting with live work in the spreadsheet on XR features, where our hosts were present to provide their eye tracking expertise. In the afternoon, two different implementations of a whack-a-mole task was tested across two different XR headsets, to compare data outputs.

Friday we met with our hosts to prepare our next steps, future access to patients for testing, and discussed data post-processing pipelines for XR rehabilitation software, including narrow field and smooth pursuit calibration, divergence movement analysis in XR, visualization via radar plots.

[1] This report is submitted by the grantee to the Action MC for approval and for claiming payment of the awarded grant. The Grant Awarding Coordinator coordinates the evaluation of this report on behalf of the Action MC and instructs the Grant Holder Manager to verify the grant documents compliance and proceed with the payment.

Description of the STSM main achievements and planned follow-up activities

Description and assessment of whether the STSM achieved its planned goals and expected outcomes, including specific contribution to Action objective and deliverables, or publications resulting from the STSM. Agreed plans for future follow-up collaborations shall also be described in this section.

(max. 500 words)

The STSM achieved its planned goals.

- A preliminary shortlist of candidate XR eye-tracking features for spatial neglect diagnosis was developed and technically documented through Whack-A-Mole pilot tests: hardware specs, accuracy, calibration procedures, gaze position, pupilometry, input modality, response timing, search strategy, spatial bias – the list will eventually inform the feature extraction set for the WG1 reviews and ensure there is involvement from researchers with expertise within eye tracking.
- The joint work with the host team provided dedicated time to investigate XR engineering, eye-tracking and neurorehabilitation, with hands-on experience for two headsets (Vive XR Elite and Vive Focus Vision).
- The STSM identified neglect-specific calibration needs such as narrow field calibration and smooth pursuit calibration; analysis of divergence movement as a potential neglect indicator in XR.
- The ST1 tools review spreadsheet was enhanced with category-specific sheets and an overview, and the LLM assistant was refined to process the sheets, allowing human-AI collaboration during the WG1 Tools meeting. The spreadsheet tool can be repurposed for other working group if needed.

Planned follow-up activites:

- The hosts at SWPS University will plan to continue their contributions to WG1 Tools review.
- The whack-a-mole data will continue to be used as a platform to pilot test feature extraction.
- Collaboration will continue on harmonising setup details, interaction primitives and design characteristics for spatial neglect.
- A potential future STSM was discussed for either WG4 or WG1 in which the researchers at SWPS could visit researchers in Aalborg, to further the synthesis of recommendations for eye tracking in XR rehabilitation applications.