

Supplementary Material - Additional Figures

March 8, 2024

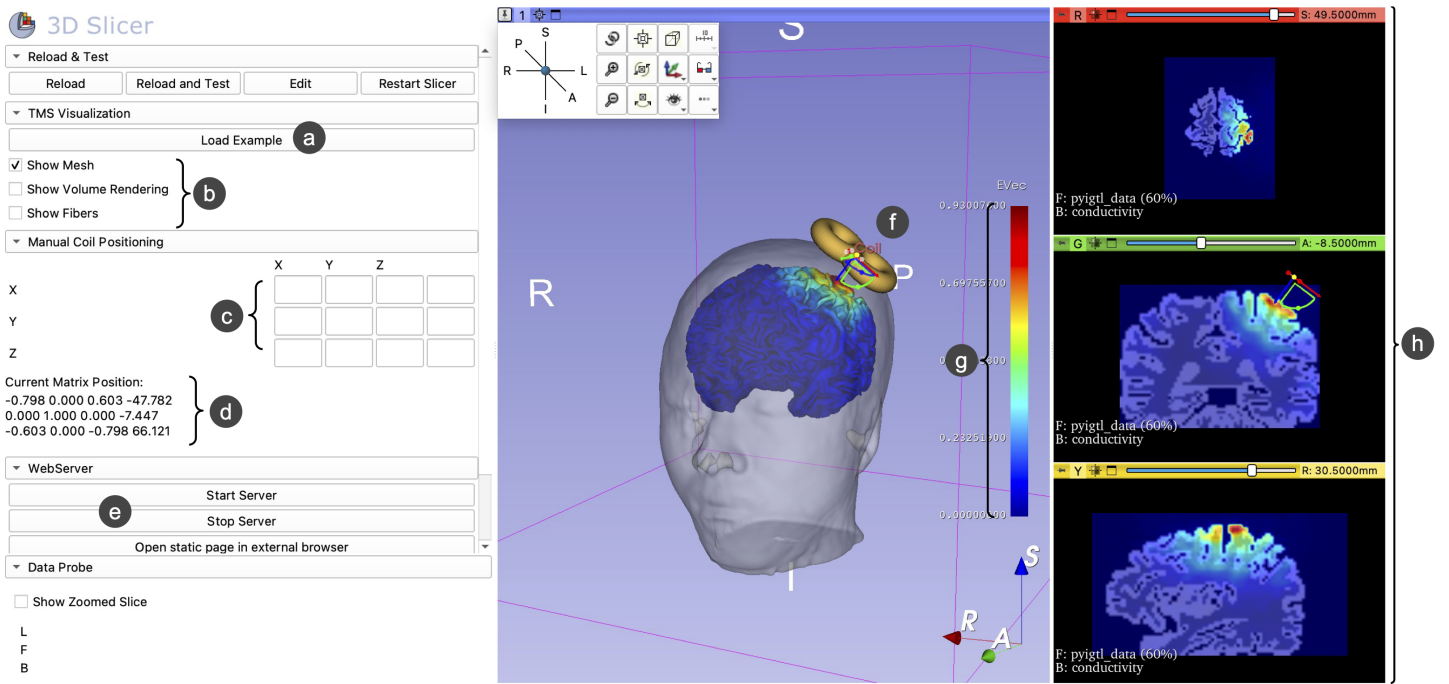


Figure 1: SlicerTMS User Interface: **(a)** Button to load the current patient data from the data folder. **(b)** Different visualization modes can be selected with checkboxes: Mesh, Volume, and Fibers. **(c)** Field to enter a coil position matrix manually. **(d)** System shows the matrix where the coil is positioned in 3D. **(e)** Starting and stopping the web server for augmented reality inside the browser. **(f)** Coil with interaction handles to rotate and move the coil. **(g)** Color legend showing the strength of the electric field with EVec values. **(h)** Red, green, and yellow 2D slices show the electric field in all three directions where the electric field is strongest. Millimeter values give the exact volumetric position of each slice.

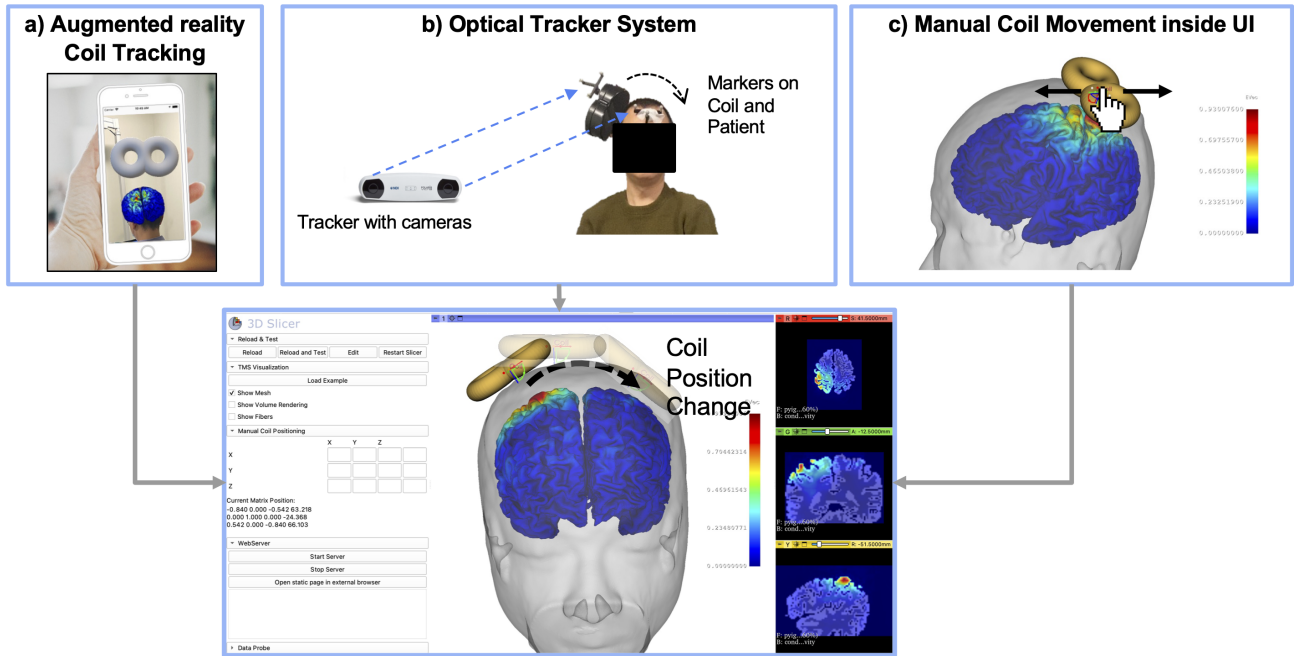


Figure 2: **Different Interaction modes to rotate and move the coil inside SlicerTMS.** (a) Using the phone with Augmented Reality by running the WebXR session in the browser where the phone simulates the coil movements. (b) Using an Optical tracking system with two cameras and attached markers to the coil and patient's head. (c) Manual coil placement inside the user interface of SlicerTMS by dragging and rotating the coil to a desired position in 3D.

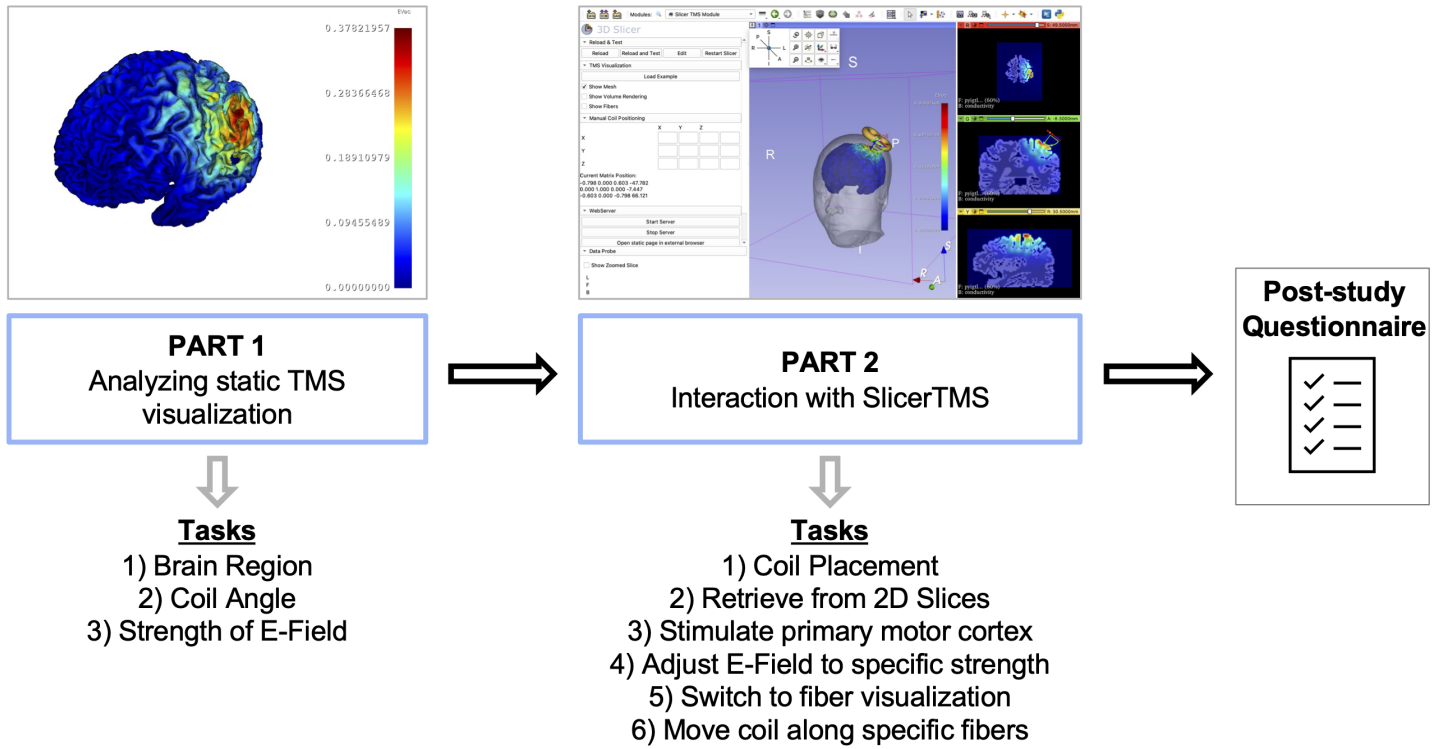


Figure 3: **Overview of the Expert Study with each part.** Part 1 consisted of analyzing a static TMS image as shown above while answering the three questions below. Part 2: UI of SlicerTMS on top with which the experts had to interact while working on the tasks listed below. Finally, user filled out the post-study questionnaire assessing usability and perceived workload.

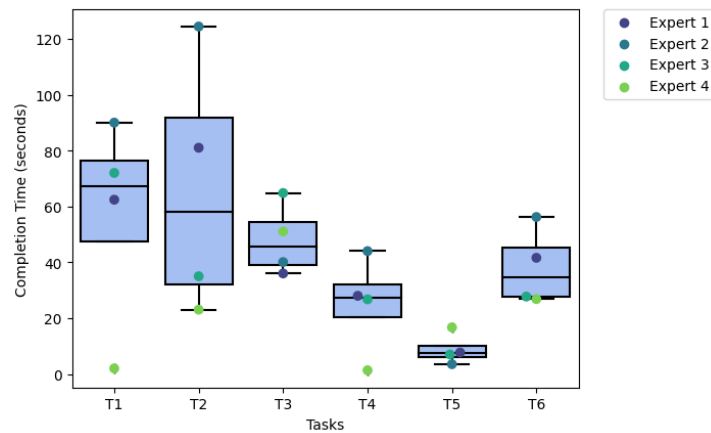


Figure 4: **Part 2.** Completion times of the tasks in seconds of Part 2 of the study. Experts interacted with SlicerTMS by fulfilling 6 tasks (T1-T6). Each expert is depicted in a different color.










































Question	E1	E2	E3	E4	Avg.
Q1 Experience with TMS (in years)	2	5	7	4	4.5
Q2 Did you ever perform tasks involving the extraction or analysis of data from visualizations?	yes	yes	yes	no	
Q3 In general, I found it easy to fulfill the tasks.					4.25
Q4 Switching between mesh, volume, fibers was straightforward & intuitive.					4.75
Q5 The views of the 2D Slices were understandable and helpful.					4.5
Q6 Seeing the electric field in the 2D Slices is beneficial for TMS treatment planning.					4.25
Q7 The visualization of the 3D TMS coil and the brain was very pleasing.					4.5
Q8 The colored electric field distribution was very clear.					5
Q9 How responsive was the tool to changes in stimulation parameters (e.g., coil location, intensity)?					4.5
Q10 I do trust the real-time feedback provided by the neural network prediction (electric field).					4.25
Q11 Overall, I thought the system was easy to use.					4
NASA Task Load Index					
N1 Mental Demand: How mentally demanding was the task?	5	5	5	5	5
N2 Physical Demand: How physically demanding was the task?	1	0	0	5	1.5
N3 Temporal Demand: How hurried or rushed was the pace of the task?	5	0	3	9	4.25
N4 Performance: How successful were you in accomplishing what you were asked to do?	18	18	20	18	18.5
N5 Effort: How hard did you have to work to accomplish your level of performance?	8	5	5	8	6.5
N6 Frustration: How insecure, discouraged, irritated, stressed, and annoyed were you?	2	1	0	10	3.25

Table 1: Results of the post-study questionnaire with color-encoded Likert scales showing expert answers. The Likert scale color legend indicates 1 (Totally disagree) to 5 (Totally agree) with the color encoding     . The NASA Task Load Index was measured with a scale from 0 (very low) to 21 (very high).