🤝 Task Division for Parallelization

Peer 1: Focus on Stimulus-Locked ERPs (P2, N2, P3) and Lab Exercise 2

Peer 1 will focus on the most commonly studied Event-Related Potentials (ERPs), P2, N2, and P3, which are stimulus-locked, and will take on the self-contained coding task of Lab Exercise 2.

Lab Exercise 1 Tasks (P2, N2, P3)

Section	Task Description	Functions/Components
3.5	**Stimulus-Locked Overlap Analysis:** Plot the first five Stimulus-locked epochs (Fz, Cz, Pz, congruent/incongruent)[1].	promedioStimulusLocked
3.5	**Stimulus-Locked Averaging Effect:** Calculate and plot averages for 10, 20, 30, 40, and all Stimulus-locked epochs[2].	promedioStimulusLocked
3.5	**P3 Feature Stability:** Calculate and plot P3 amplitude and latency vs. number of epochs (increments of 5, incongruent stimuli) for Fz, Cz, Pz[3333333333333333].	promedioStimulusLocked
3.6		promedioStimulusLockedv2

	Stimulus-Locked Alignment Effect: Calculate and plot Stimulus-locked averages with $\sigma=10$ and $\sigma=20$ misalignments[4].	
3.7	**P3 Topography:** Calculate and plot P3 peak topograms for congruent and incongruent stimuli[5555555].	promedioStimulusLocked, draw_topogram

Lab Exercise 2 Tasks (VSTM Task)

Section	Task Description	Functions/Components
4	**P300 Calculation and Plotting (Student 2):** Code the MATLAB routine to calculate, baseline-correct, smooth, and plot the average stimulus-locked EEG epoch (P300) for congruent, incongruent, and joint stimuli on Fz, Cz, Pz[6].	Custom MATLAB code
4	**P300 Localization (Student 2):** Calculate P3 peak amplitudes for all 14 channels and plot three topograms (congruent, incongruent, joint) using	draw_topogram2

	draw_topogram2[7].	
4	**Behavioral Analysis (All Students):** Calculate the mean/std of response time and the percentage of correct responses for congruent and incongruent trials for **all four students**[8].	Custom MATLAB code

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Peer 2: Focus on Response-Locked ERPs (ERN) and Report Preparation

Peer 2 will focus on the Response-Related Negativity (ERN), which is response-locked, and will be responsible for synthesizing the final report and analysis based on both peers' results.

Lab Exercise 1 Tasks (ERN)

Section	Task Description	Functions/Components
3.5	**Response-Locked Overlap Analysis:** Plot the first five Response-locked epochs (Fz, Cz, Pz, both stimuli combined)[9].	promedioResponseLocked
3.5	**Response-Locked Averaging Effect:** Calculate and plot averages for 10, 20, 30, 40, and all Response-locked epochs. Review the ERN component[11].	promedioResponseLocked

3.5	**ERN Feature Stability:** Calculate and plot ERN amplitude and latency vs. number of epochs (increments of 5) for Fz, Cz, Pz[12121212121212121212121212121212].	promedioResponseLocked
3.6	**Response-Locked Alignment Effect:** Calculate and plot Response-locked averages with $\sigma=10$ and $\sigma=20$ misalignments[131313].	promedioResponseLocked v2
3.7	**ERN Topography:** Calculate and plot ERN peak topogram for all correction responses (absolute values)[141414141414].	promedioResponseLocked, draw_topogram

Synthesis and Analysis Tasks

Task Description	Responsibility
3.5 & 3.6 Analysis: Analyze the stability results (P3 & ERN) to find the minimum required epoch number and comment on the quantitative logic[15]. Analyze the effect of misalignment[16].	**Peer 2**
3.7 Analysis: Observe and comment on	**Peer 2**

the differences between the P3 and ERN topograms[17].	
Final Report/Presentation: Compile all figures, tables, and analysis sections from both peers into the final lab submission.	**Peer 2**

This division allows both of you to work immediately and independently on distinct, large sections of the lab, minimizing overlap while ensuring all required plots and analyses are completed.