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Alpha Wave Frequency and Eccentricity Dependent Reaction Time

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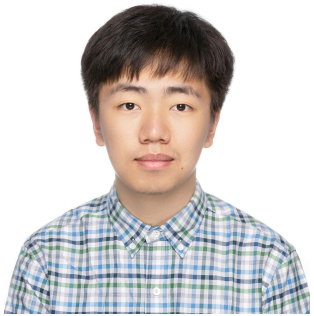
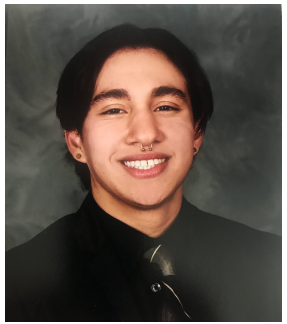
Group Members



Yichen Wang

Mathematics of Computation



Alejandro Gutierrez

Psychobiology

Chicano Studies

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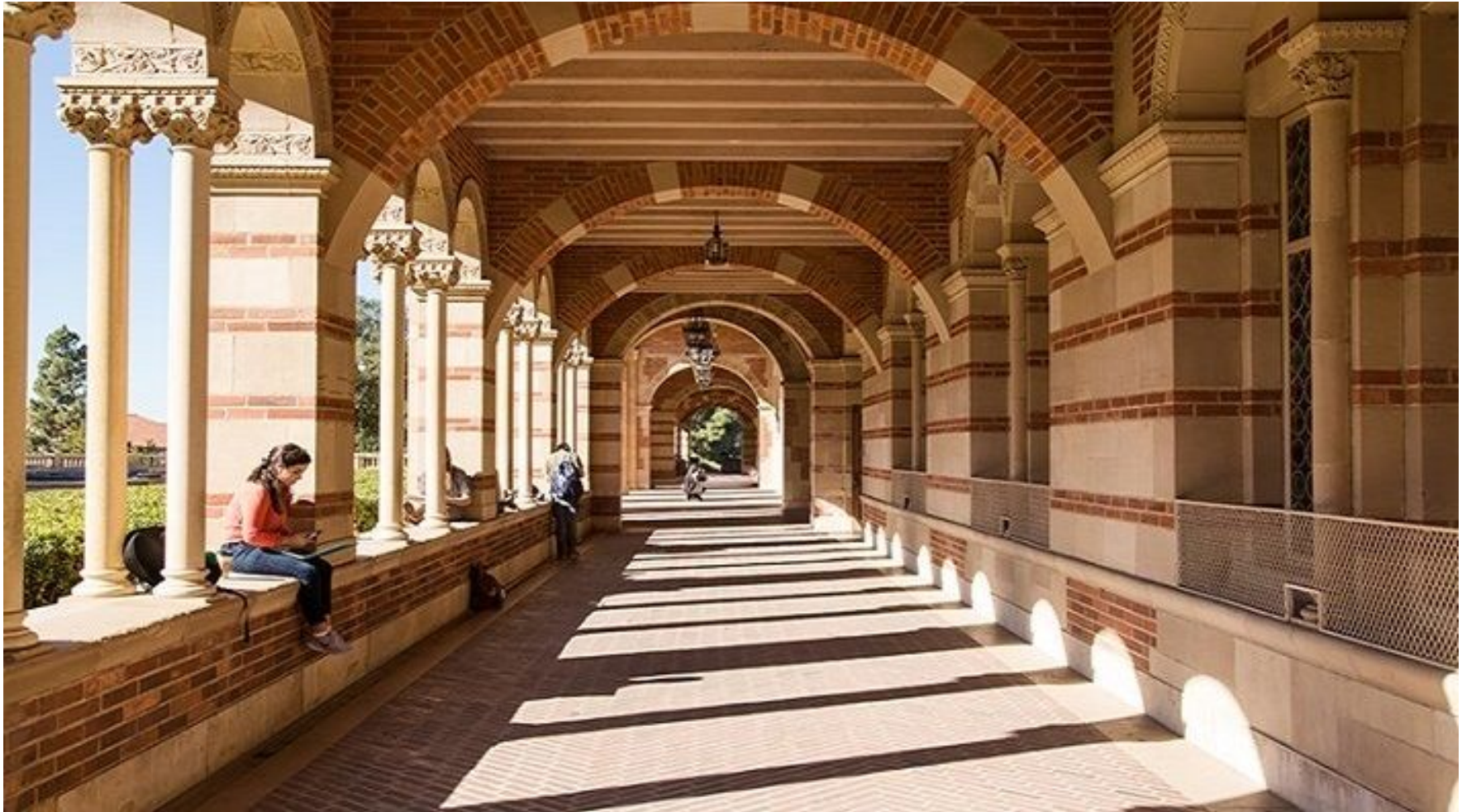

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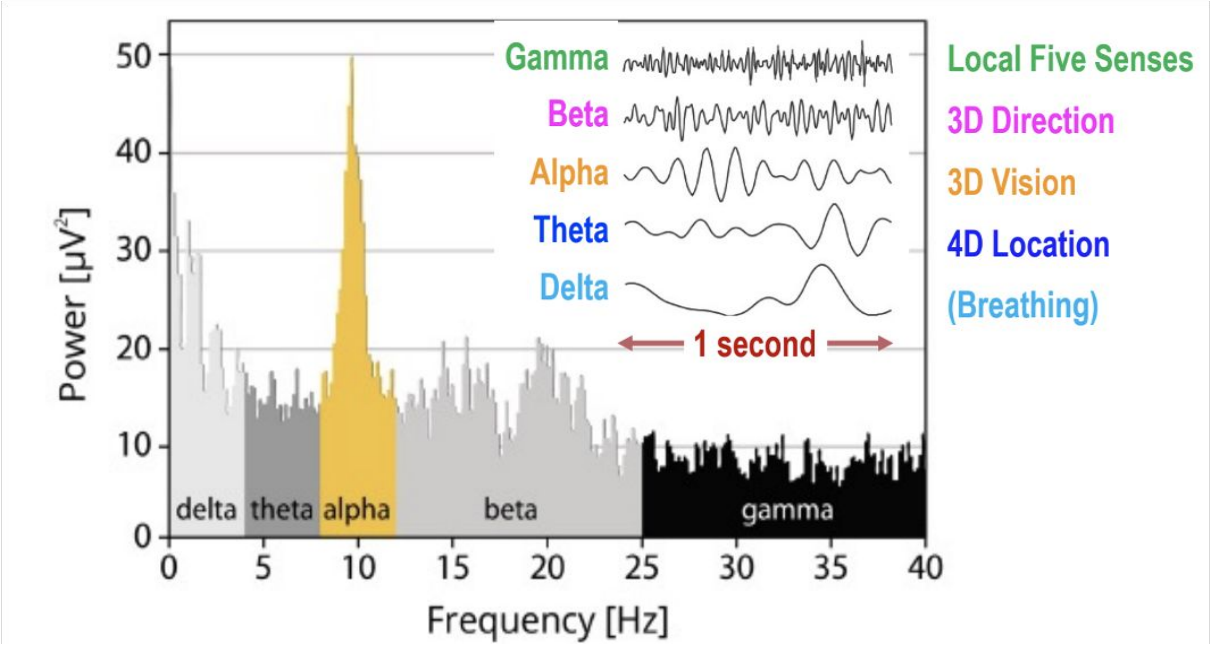

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Arisaka 2022

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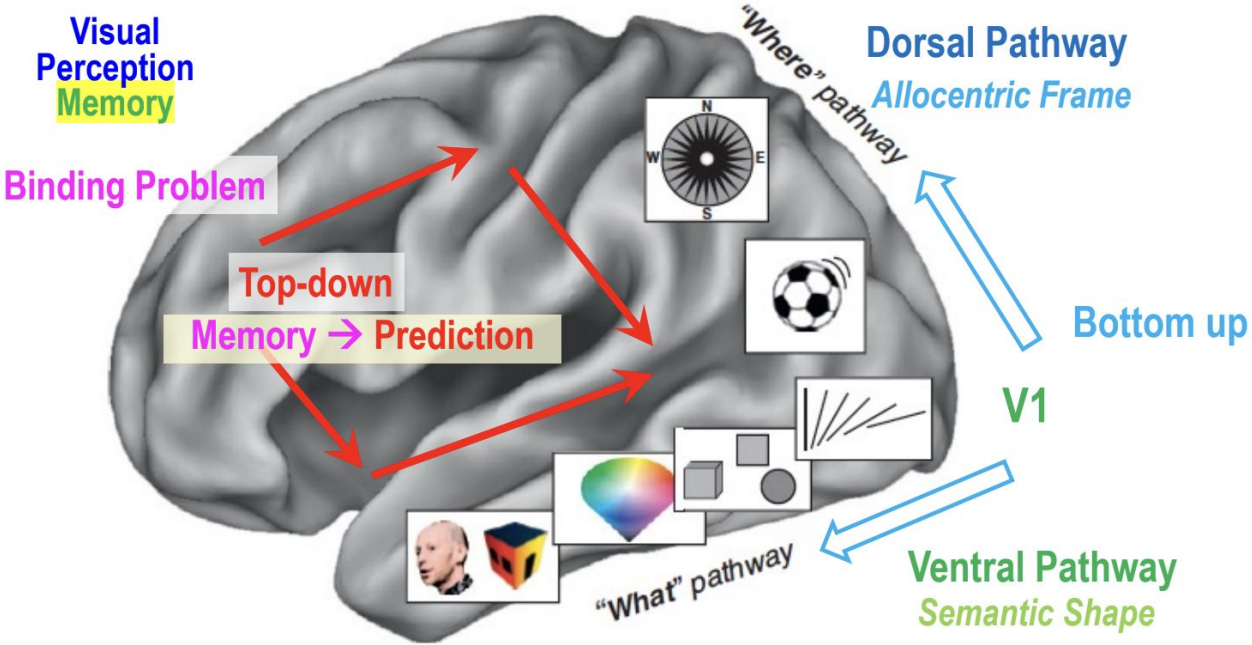

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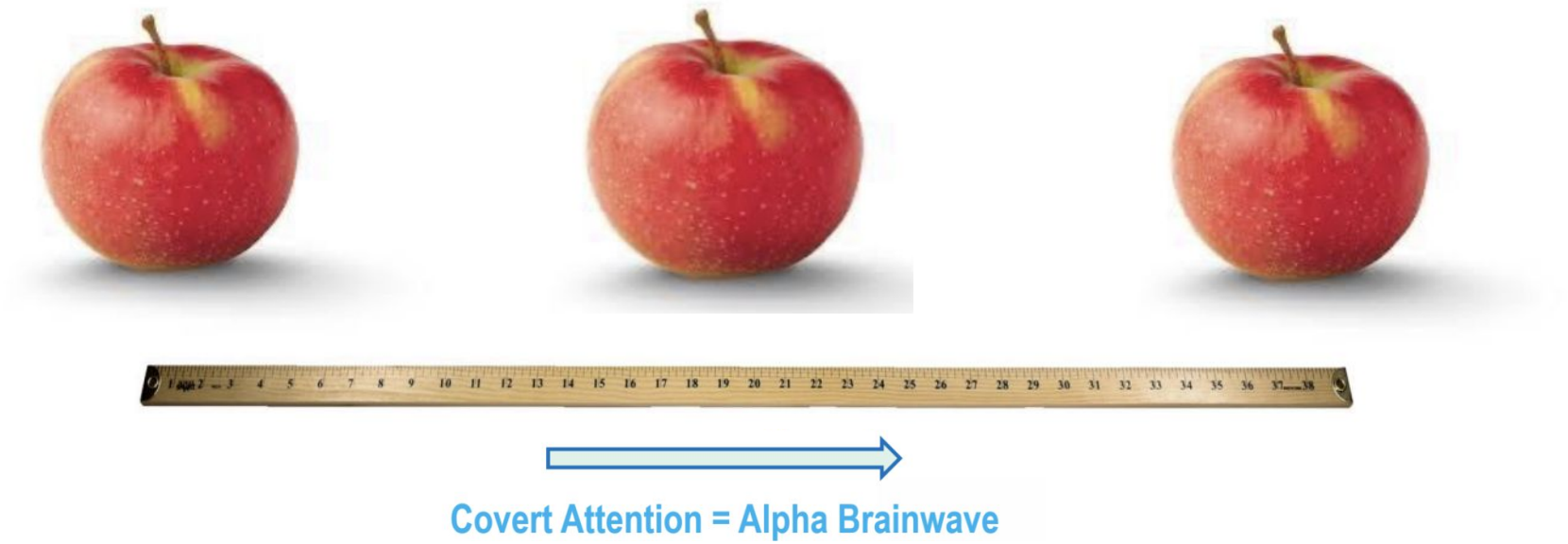

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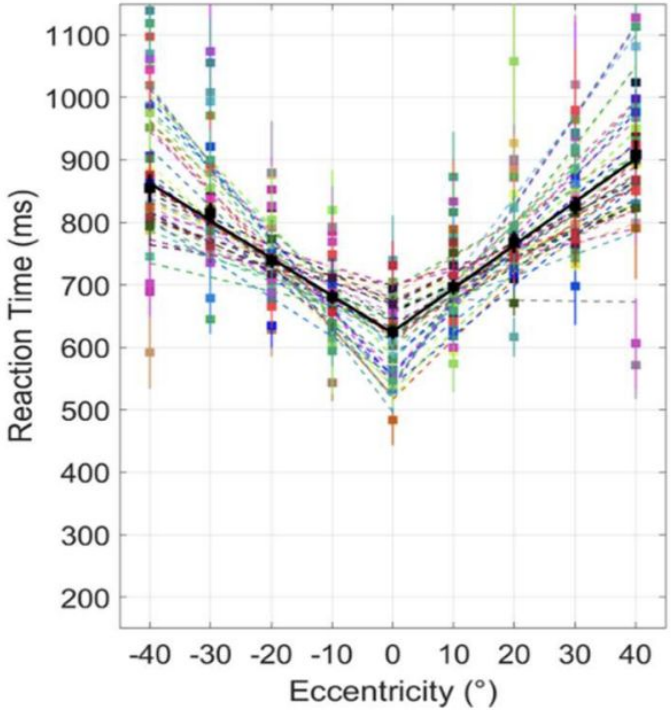

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Scientific Motivation

Motivation:

1. Build on our previous studies.
2. Neural recording data implementation.
3. Significant or insignificant correlation.

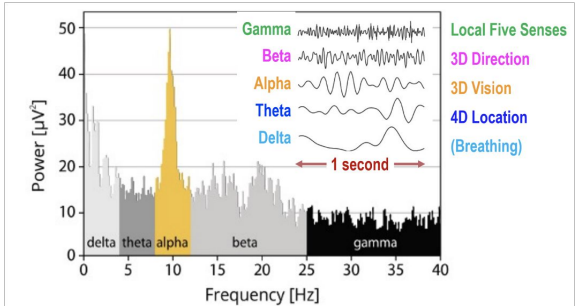
Scientific Question

Question:

Is there a correlation between EEG peak α-wave frequency and the slope of visual stimuli reaction time to eccentricity?

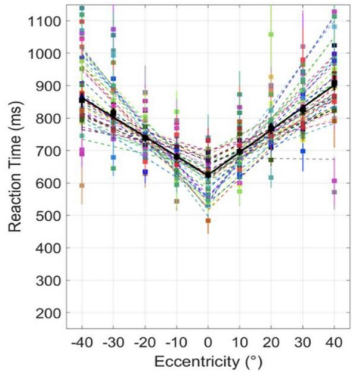
Hypothesis

We hypothesize that there is inverse correlation between alpha wave peak frequency and reaction-time - eccentricity slope



Alpha Peak Frequency

Eccentricity-RT Slope



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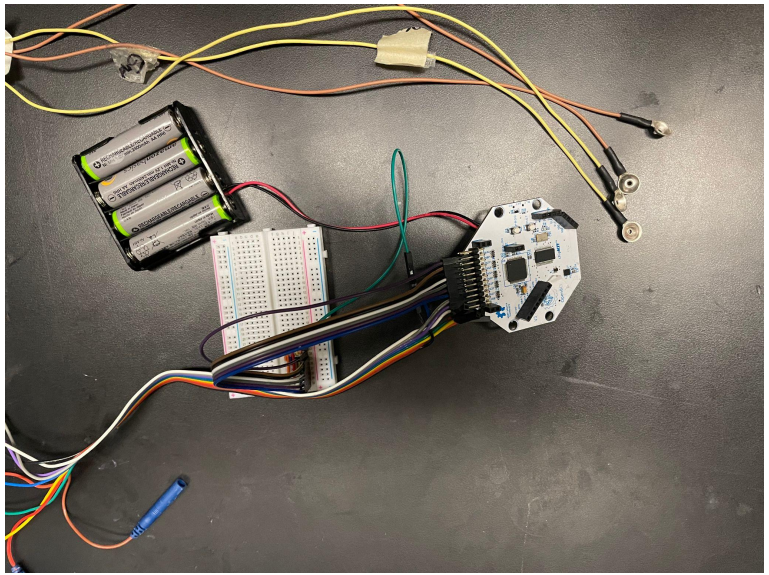
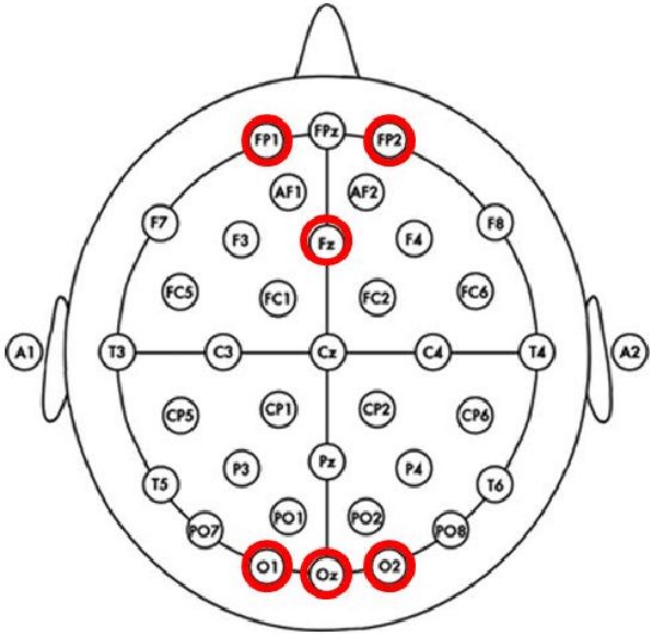
Protocol





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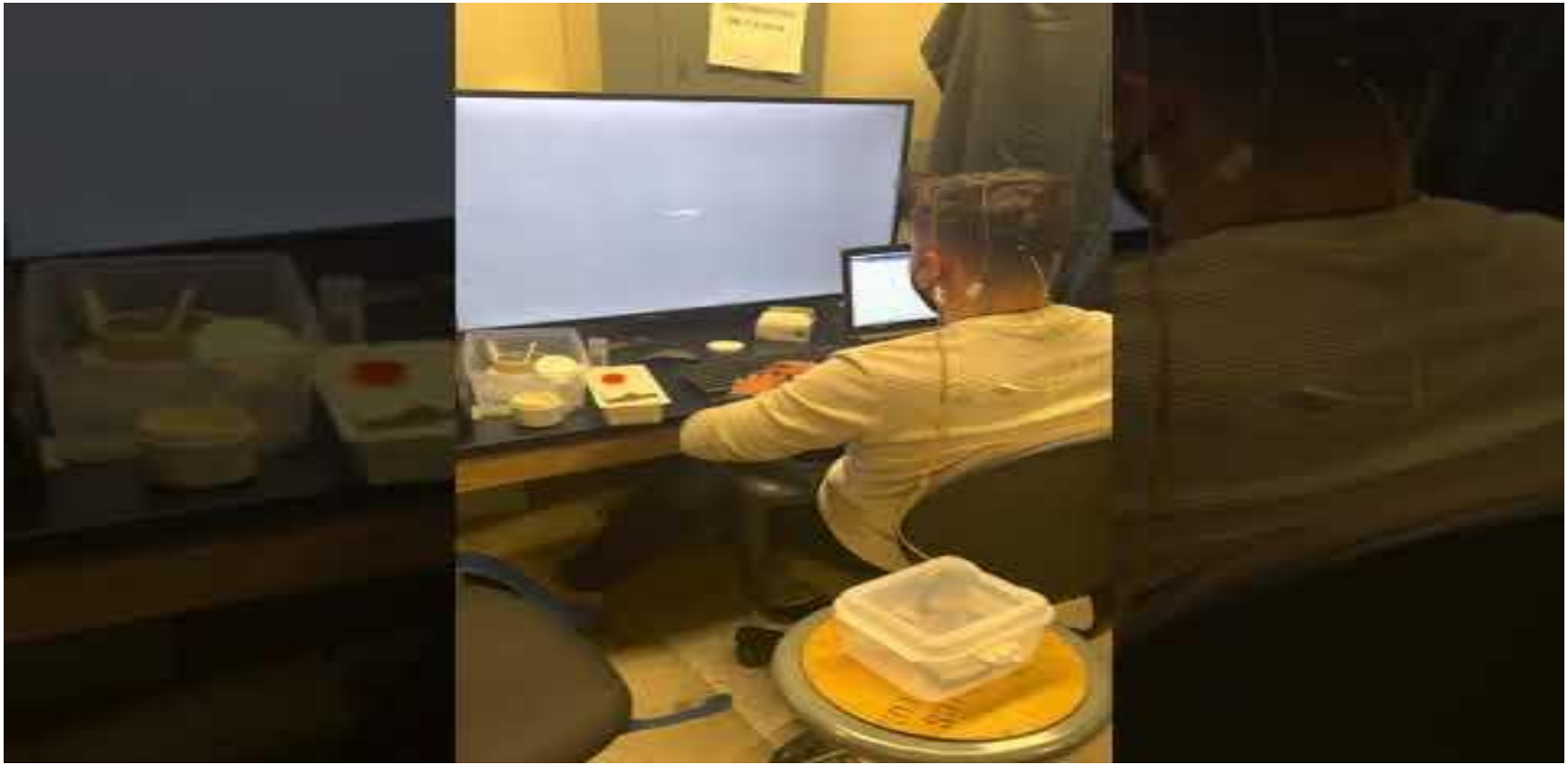

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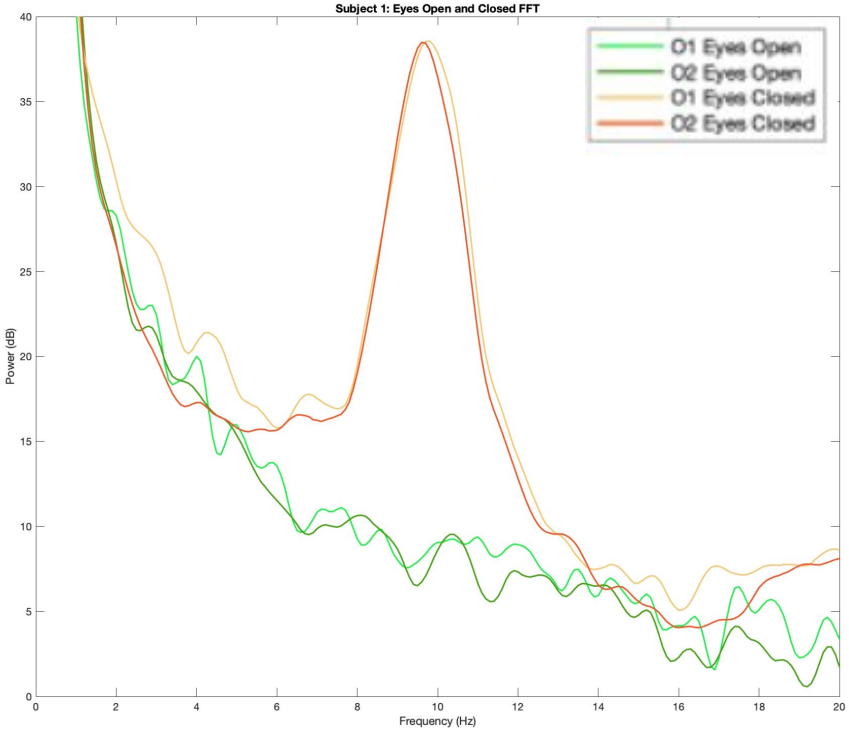
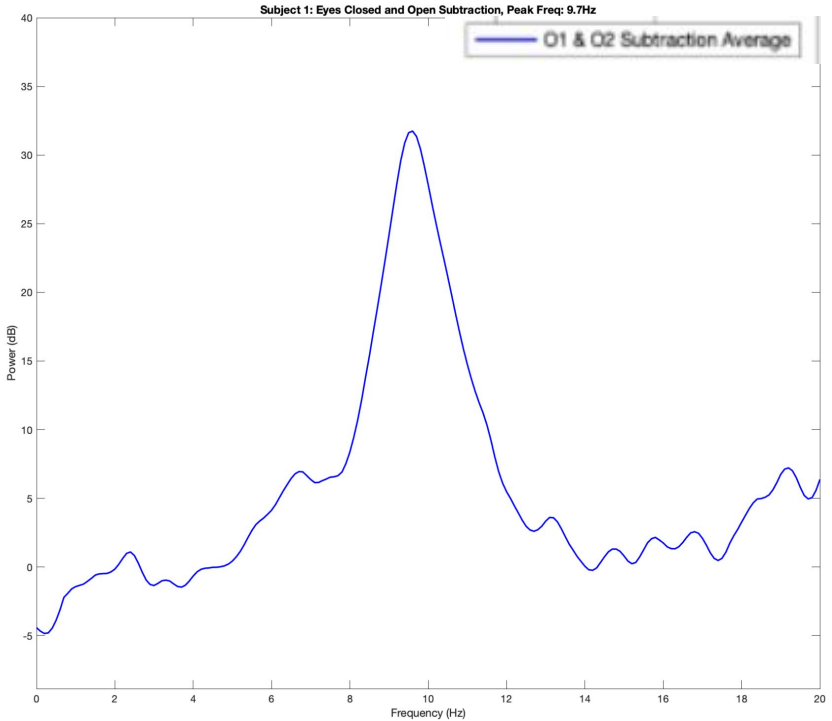
EEG Frequency Distribution at O1 & O2





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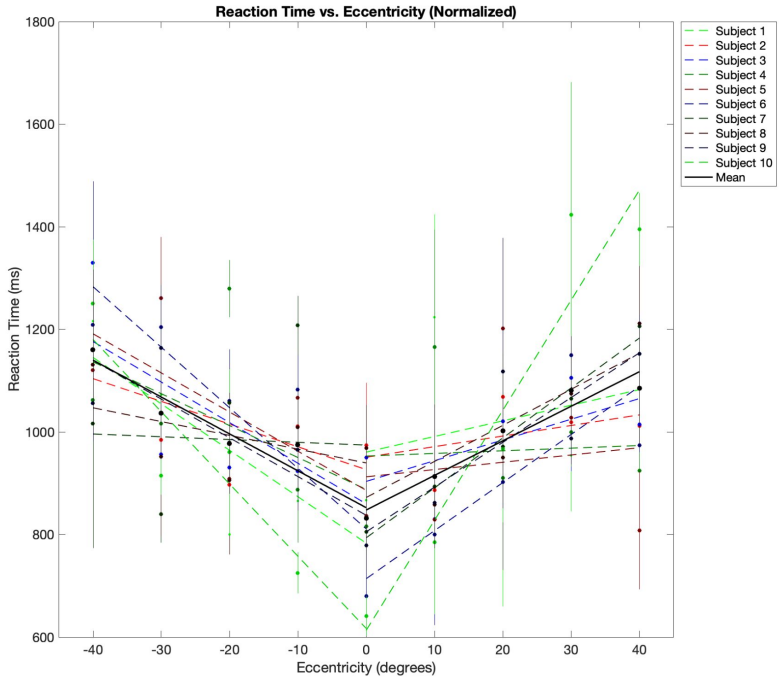
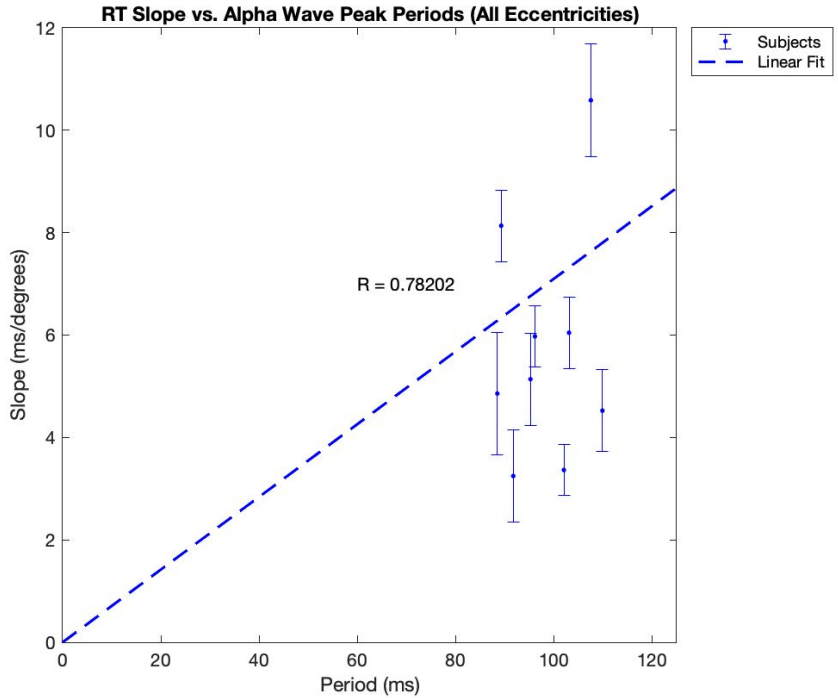
Reaction Time vs. Eccentricity Plots



N=8

RT Slope vs. Alpha Peak Correlation



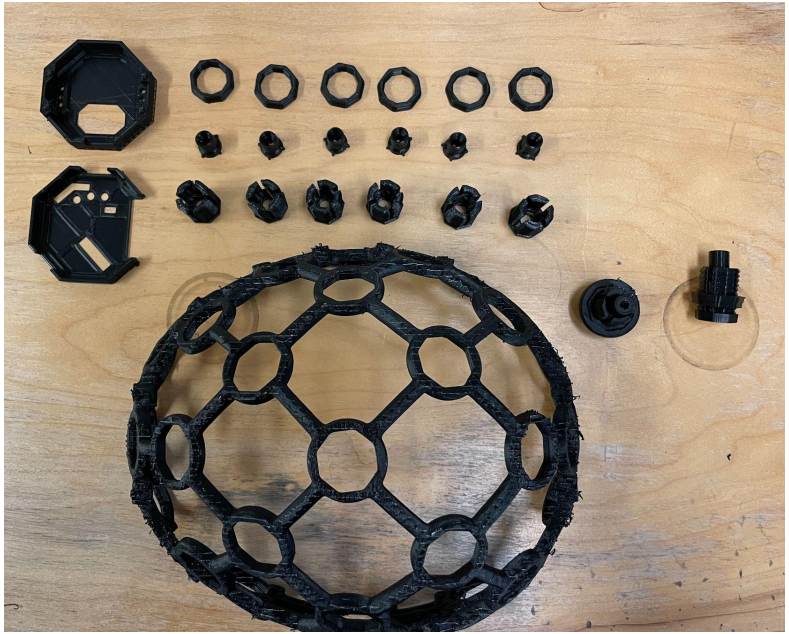
- Period $\propto$ RT/Ecc
- Period = 1 / Frequency
- Frequency $\propto$ 1 / RT/Ecc

N=9

Conclusion

- Suspect that peak frequency of alpha wave is inversely proportional to RT vs. eccentricity slope for all eccentricities
- Require more data to be more conclusive

Future Directions



Acknowledgements

Special thanks to:

All participants of our experiment

The Elegant Mind Club

UCLA Department of Physics & Astronomy

References

Arisaka, Katsushi. 2022. Grand Unified Theory of Mind and Brain - Part I: Space-Time Approach to Dynamic Connectomes of C. elegans and Human Brains by MePMoS.” PsyArXiv. March 6. doi: 10.31234/osf.io/r8ma3.

Thank You