Final Project Topic

1. Group Members:

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1. Project Overview:

This project will look at how networks of neurons can trigger epileptic seizures. It will use an updated neuronal model provided in [1] to look at small-world networks and how susceptible they are to seizures. These results will be compared against the results in [2] to see how a more complete neuronal model affects the dynamics and existence of a seizure. [3] will be used as a basis for research into different models of epilepsy to potentially provide a mode detailed model for study.

1. Resources:

[1] A. G. Giannari and A. Astolfi, “Model design for networks of heterogeneous Hodgkin-Huxley neurons,” *Neurocomputing*, vol. 496, pp. 147-157, July 2022. [Online]. doi: 10.1016/j.neucom.2022.04.115.

[2] T. I. Netoff, R. Clewley, S. Arno, T. Keck, and J. A. White, “Epilepsy in small-world networks,” *Neurobiology of Disease*, vol. 24, no. 37, pp. 8075-8083, Sept. 2004. [Online]. doi: 10.1523/JNEUROSCI.1509-04.2004.

[3] F. Wendling, P. Benquet, F. Bartolomei, and V. Jirsa, “Computational models of epileptiform activity,” *Journal of Neuroscience Methods*, vol. 260, pp. 233-251, Feb. 2016. [Online]. doi: 10.1016/j.jneumeth.2015.03.027.