**Project Proposal for ECE 597/697 NM Fall 2022**

Project topic:

Build a model to emulate the oscillation and other neuromorphic behavior in diffusive memristors

Team member:

A diffusive memristor is a promising block designed for brain-inspired computation and creates a great potential for their application in neuromorphic systems. It consists of clusters of silver nanoparticles embedded within a thin film of silicon oxynitride, located between two electrodes. The film is an insulator, but when an electrical pulse is applied, heat and electricity work together to disintegrate the particle clusters, the nanoparticles spread out through the film and eventually form a conductive filament that allows current to travel from one electrode to the other. Once the voltage was removed and the temperature dropped, the nanoparticles reassembled into clusters.

In this project, we will make use of Simulink to establish the model of diffusive memristor and emulate the behavior of the synapses through it.