Exploring Effect of Different Network Topologies on Fixation Time in Evolutionary Graph Theory
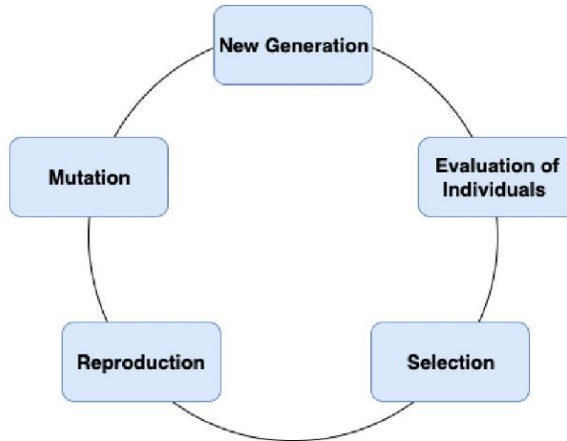# 07-300 / 400

Viola Chen

Background

Genetic algorithm:

Probability of fixation: probability that a beneficial mutation will stay in the population

Time to fixation: time taken for a beneficial mutation to propagate through the population

Impact

- Genetic algorithm and other evolutionary-based algorithms are useful ways to optimize neural networks

- Understand how the spatial arrangement and communication pattern of population influence the evolution could lead to faster optimization and/or solution discovery for genetic algorithms and neural networks

Project Goal

- Understanding how different network topologies could play a role in the time to fixation in evolutionary graph models, hopefully without affecting probability of fixation

- Assess the performance of the different network topologies in a variety of fitness spaces

The team

Faculty mentor:

Professor Oana Carja, Computational Biology department

Potentially working with her Ph.D. student

Y.P. Kuo, **Joint CMU-Pitt Ph.D. Program in Computational Biology**

Thank you