Neural networks are large interconnected dynamical systems. These networks are capable of learning and reproducing a verity of complex tasks. In our latest published research:

Vyasarayani, C.P., Chatterjee, A. Complete dimensional collapse in the continuum limit of a delayed SEIQR network model with separable distributed infectivity. Nonlinear Dynamics (2020). https://doi.org/10.1007/s11071-020-05785-2 A time-delayed network model relevant to modeling the spread of infections among the population segregated based on their infectivity has been studied. We demonstrated that in the continuum limit when the number of nodes in the network becomes infinite, low-dimensional behavior emerges. This work has direct applications to modeling the spread of COVID-19, and work is underway to use the model for predicting the infection among different countries.
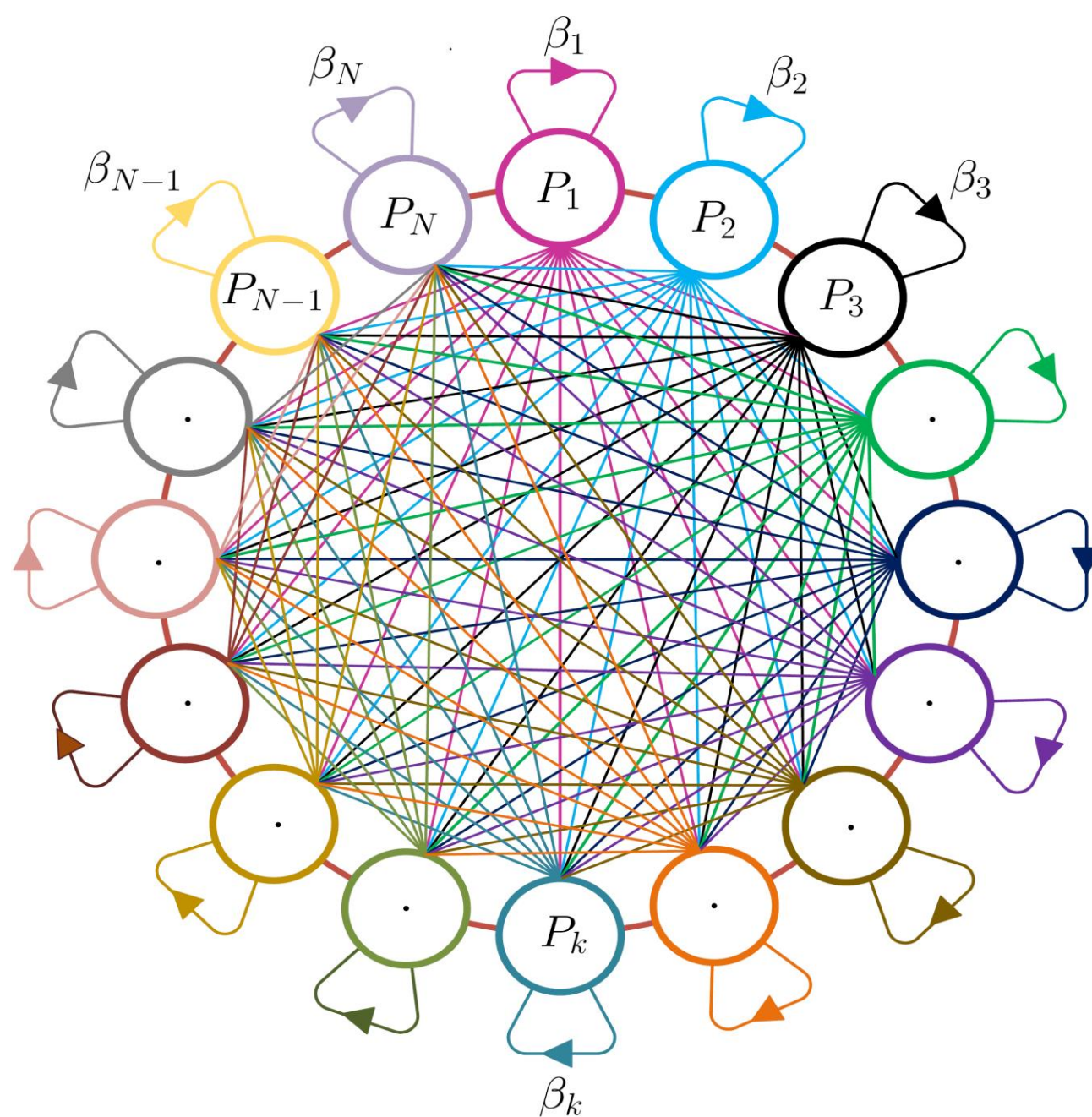

Figure 5: A schematic representation of N interacting population groups with different infection spread rates among each group. Every connection between two groups is bidirectional and symmetric, and every group is connected to all other groups (a dense network).