Networks Project Proposal

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1 Topic

Effects of neural network structure on learning speed.

2 Work plan

We would like to work on a project concerning neural networks. We want to analyze how network structure, quantified via network metrics, affects the learning speed of a neural network. Often a multilayer structure is used for neural networks, but we would like to investigate what is important for the effectiveness of a general network structure. We propose that we implement a neural network controller for a simulated system, and then evaluate the performance of the controller for different network structures. Specifically, we propose that we take some generative network model and run this simulated controller system with many different neural networks, generating different network structures by varying the parameters of the generative network model. We then assess whether there is a relationship between the changing parameters and the effectiveness of the neural network.

3 Desired feedback

We primarily want to work on a project involving neural networks, and this was a project we saw as being interesting and relevant to the content of the class. We would love some guidance on this. Does this project seem appropriate and doable? Is there a different neural network project that would be better? If the project is appropriate, we would love some advice and discussion on which network structures would be valuable to investigate.