

Project Title:

Analyzing computational mechanisms in the brain by recurrent neural networks

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1. Background and purpose of the project, relationship of the project with other projects	6. Schedule and prospect for the future
2. Recurrent neural networks (RNNs) are increasingly popular machine learning tools which have been proposed as theoretical models to capture principles of cortical computation. In addition to being able to account for several properties of neural responses observed in biological circuits, RNNs and their dynamics can be reverse-engineered to address important questions about the underlying computational mechanism at play in neuronal populations (Mante et al., 2013). In addition, the predictions of RNN models can be validated experimentally using modern neuroscience tools such as optogenetic perturbations. Unfortunately, the considerable computational cost of artificial neural network optimization is a well-known bottleneck in performing this type of research, particularly when the training of many models on large-scale neurophysiological data is necessary, leading to the need for suitable computational resources.	N/A 7. If no job was executed, specify the reason. No researcher in the laboratory was involved in any project requiring the supercomputer in FY2018
3. Specific usage status of the system and calculation method	
N/A	
4. Result	
N/A	
5. Conclusion	
N/A	