Brain-inspired Deep Learning Models

Xiaolin Hu

Department of Computer Science and Technology, Tsinghua University, Beijing, China

E-mail: xlhu@tsinghua.edu.cn

Our visual system is organized in a hierarchical manner, and its processing of visual input undergoes different stages. Lower level areas process simple patterns and higher level areas process complex patterns, which inspired the origination of deep learning models several decades ago. Some other properties of the visual system such as local receptive fields of neurons also play important roles in deep learning models. It is worth exploring other properties of the brain for developing more efficient deep learning models. In this talk, I will introduce a few deep learning models for computer vision developed in my lab, which is mainly inspired by sparse activity of neurons and recurrent connections in the cortex.