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Shuiwang Ji* (sji@eecs.wsu.edu). *Deep Learning for Connectomics*.

Abstract: The importance of research that aims to unlock the mystery of the human brain has recently been recognized worldwide. In January 2013, the European Union selected the Human Brain Project to be one of its two flagship projects. In April 2013, the White House announced the Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative to generate a dynamic map of the brain. As these projects move forward, big data analytics will be playing increasingly important roles in converting big brain data into useful knowledge. A key challenge in analyzing brain data is to construct feature representations from brain images. In this talk, I will discuss our efforts in developing deep computational models for learning representations from brain data. In particular, I will provide details on how to use deep learning methods to elucidate the micro-scale brain connectomics among neurons. I will also show that our methods can be used in a number of diverse computational brain discovery tasks. Additionally, they may be used in other areas beyond brain analytics. (Received February 28, 2017)