

## COMPUTER SCIENCE RESEARCH SEMINAR

### Generative Adversarial Networks as Variational Training of Energy Based Models

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**Abstract:** In this talk, we focus on deep generative models for unsupervised learning. We introduce VGAN, which works by minimizing a variational lower bound of the negative log likelihood (NLL) of an energy based model (EBM). VGAN is inspired by the generative adversarial networks (GANs), but with several notable differences. VGAN provides a practical solution to training deep EBMs in high dimensional space, by eliminating the need of MCMC sampling. From this view, we are also able to identify causes to the difficulty of training GANs and propose viable solutions. We also shed light on the connection between several families of unsupervised learning models/methodologies, and discuss promising future directions.

**Bio:** Shuangfei Zhai is currently a final year Ph.D student in Computer Science at Binghamton University, SUNY, where he works with Prof. Zhongfei (Mark) Zhang. Before coming to Binghamton University, he obtained his B.E. in Electronic Engineering and Information Science in University of Science and Technology of China (USTC), Hefei in 2010. He was a master student in Chinese Academy of Sciences during 2010-2012. Shuangfei's research lies in the broad area of machine learning, with a focus on deep learning. In particular, he is interested in learning representations for unsupervised, semi-supervised, weakly supervised and implicitly supervised problems. He also likes to think about building efficient deep models on the practical side. He has published as first author in top conferences such as NIPS, ICML, CVPR, KDD, AAAI, WWW, SDM.

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**Pizza will be provided!**