Challenges in Latent Variable Models and Generative Models

BIOSTATISTICS SEMINAR

Xiao Wang, PhD
Professor
Department of Statistics
Purdue University

Latent variable models are an indispensable and powerful tool for uncovering the hidden structure of complex data. The well-known latent variable models in statistics include linear mixed models and Bayesian hierarchical models. The generative models in machine learning such as GANs and VAEs also belong to latent variable models. In this talk, we introduce two new frameworks for the inference of latent variable models that overcome the current limitations. The first one is called ALMOND, which allows for a fully data-driven latent variable distribution via deep neural networks. The proposed stochastic gradient method, combined with the Langevin algorithm, is efficient and suitable for complex models and big data. The second one is called inferential Wasserstein GANs (iWGANs), which is a principled framework to fuse auto-encoders and Wasserstein GANs. The iWGAN model jointly learns an encoder network and a generator network motivated by the iterative primal dual optimization process. Extensive numerical studies will be performed to demonstrate the merits of the new frameworks.

Thursday November 3, 2022, 3:30-4:30 PM Eastern

133 Rosenau Hall

Virtual using link and info below.

Link: https://unc.zoom.us/j/92602267820?pwd=YW1wN1pjdUNVd1A4TTl2OStmVHBjQT09

Meeting ID: 926 0226 7820 Passcode: 533114