

NUMERICAL ANALYSIS AND SCIENTIFIC COMPUTING
SEMINAR

*A GAN-based Approach for High-Dimensional Stochastic Mean
Field Games*

Samy Wu Fung
UCLA

Abstract: We present APAC-Net, an alternating population and agent control neural network for solving stochastic mean field games (MFGs). Our algorithm is geared toward high-dimensional instances of MFGs that are beyond reach with existing methods. We achieve this in two steps. First, we take advantage of the underlying variational primal-dual structure that MFGs exhibit and phrase it as a convex-concave saddle point problem. Second, we parameterize the value and density functions by two neural networks, respectively. By phrasing the problem in this manner, solving the MFG can be interpreted as a special case of training a generative adversarial generative network (GAN). We show the potential of our method on up to 50-dimensional MFG problems.

Friday, March 27, 2020, 2:00 pm
<https://emory.zoom.us/j/313230176>

MATHEMATICS
EMORY UNIVERSITY