



Online  
seminar

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Hosted on: [Zoom](#)

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# Consensus-based High Dimensional Global Non-convex Optimization in Machine Learning

Prof. Zanella introduces the seminar.

### Abstract

We introduce a stochastic interacting particle consensus system for global optimization of high dimensional non-convex functions. This algorithm does not use gradient of the function thus is suitable for non-smooth functions. We prove, for fully discrete systems, that under dimension-independent conditions on the parameters, with suitable initial data, the algorithms converge to the neighborhood of the global minimum almost surely. We also introduce an Adaptive Moment Estimation (ADAM) based version to significantly improve its performance in high-space dimension.

### Biography

Shi Jin is the Director of Institute of Natural Sciences, and Chair Professor of Mathematics, at Shanghai Jiao Tong University. He obtained his BS degree from Peking University and his Ph.D. from University of Arizona. He was a postdoc at Courant Institute, New York University, an assistant and associate professors at Georgia Institute of Technology, and full professor, department chair and Vilas Distinguished Achievement Professor at University of Wisconsin-Madison, Chair of Department of Mathematics at Shanghai Jiao Tong University.

He also serves as a co-director of the Shanghai Center of Applied Mathematics, director of Ministry of Education Key Lab on Scientific and Engineering Computing, and director of Center for Mathematical Foundation of Artificial Intelligence at Shanghai Jiao Tong University.

He received a Feng Kang Prize of Scientific Computing in 2001, and a Morningside Silver Medal in Mathematics at the 2007 International Congress of Chinese Mathematicians. He is an inaugural Fellow of the American Mathematical Society (AMS) (2012), a Fellow of Society of Industrial and Applied Mathematics (SIAM) (2013), an inaugural Fellow of the Chinese Society of Industrial and Applied Mathematics (CSIAM) (2020), and an Invited Speaker at the International Congress of Mathematicians in 2018.