

# Distributed stochastic inertial-accelerated methods with delayed derivatives for nonconvex problems

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**Talk will take place from 1:00PM - 2:00PM through Zoom.**

**Abstract:** Stochastic Gradient Methods (SGMs) are predominant approaches for stochastic optimization. In this talk, I will present an inertial proximal Stochastic subGradient Method (SsGM) for nonsmooth nonconvex stochastic optimization. Our method has guaranteed convergence even with delayed derivatives which naturally appear in a distributed environment. The convergence can be slowed down by the information delay. Nevertheless, the slow-down effect will decay with the number of iterations for two "nicer" problem classes out of the three problem classes which we analyzed. Our numerical results on three applications clearly demonstrate the advantages of using the inertial-based acceleration. Furthermore, we observe higher parallelization speed-up in asynchronous updates over the synchronous counterpart, though the former uses delayed derivatives. To the best of our knowledge, little exploration has been made on applying acceleration to a SsGM for nonsmooth nonconvex problems in the literature prior to our work. Also, few efforts have been made to analyze an (accelerated) SsGM with delayed derivatives.