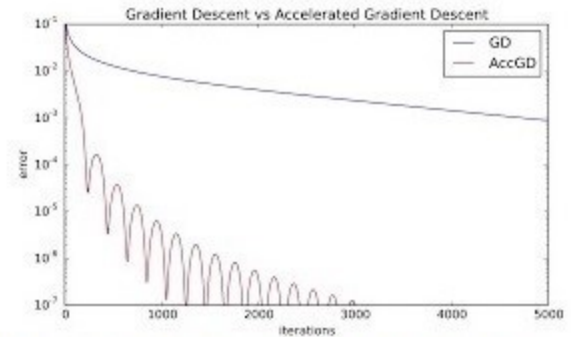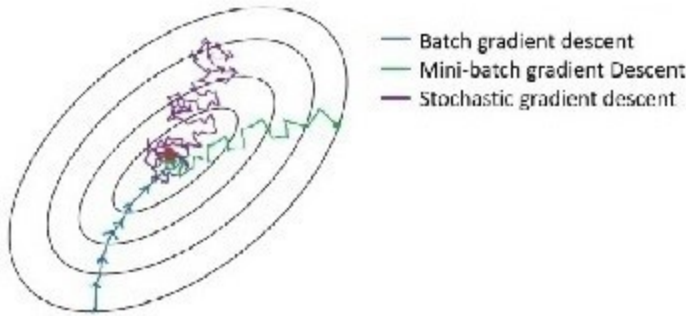MATH6001 -106   Spring 2020

Nonlinear Optimization in Machine Learning

Instructor: Wenqing Hu

Email: huwen at mst dot edu

Do you want to know more about how neural networks are trained? Have you been facing hard-to-solve optimization problems in your engineering practice? You should take this course!

We will study together in this course those modern nonlinear optimization algorithms that are very commonly used in statistical machine learning practice. Topics include: convex functions, steepest descent, line search method, heavy-ball method, accelerated gradient descent, stochastic gradient descent and variance-reduction methods, coordinate descent, alternating directions and nonconvex optimization.

No prior knowledge about machine learning is required. If you know basic calculus and some matrix algebra, as well as a little elementary statistics, you are more than ready to go through the course. Coding skill is just a plus but is not required at all for this course.

Bio: Dr. Wenqing Hu is an Assistant Professor at the Department of Mathematics and Statistics at Missouri S&T. Part of his research is about statistical machine learning and nonlinear optimization. He has been receieving the Class of '42 Excellence in Teaching award in 2018. He also serves as a program vice chair for the IEEE Big Data Conference in 2019.