



Department of Mathematics

COLLOQUIUM**On the convergence rates of first-order
and second-order algorithms for
regularized optimization****Dr. Ching-pei Lee**

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Abstract

Minimization of functions that are a sum of a smooth part and a convex but possibly nonsmooth part that promotes regularization is prevalent in many application areas, and proximal-type methods are the most effective algorithms for such regularized optimization problems. In this talk, I will present our recent advancements on the convergence analysis of first-order and second-order proximal-type methods for regularized optimization.

I will first show that the long-known $O(1/k)$ convergence rate on convex problems of gradient descent and coordinate descent in the function value is not tight and can be improved to $o(1/k)$, and extend this result to proximal gradient and proximal coordinate descent for regularized optimization.

The second part of this talk will focus on a general framework of inexact successive quadratic approximation that has second-order proximal methods including proximal Newton and proximal quasi-Newton as special cases. Global convergence rates for strongly convex, convex, and nonconvex problems will be discussed.

Date: January 9, 2019 (Wednesday)**Time: 11:00am - 12:00noon****Venue: Room 210, Run Run Shaw Bldg., HKU**