The Hong Kong Polytechnic University
Department of Applied Mathematics

Colloquium

Optimization algorithms for our times: the challenges from data science

By

Prof. Coralia CARTIS
University of Oxford

Abstract

We will discuss some key challenges to developing efficient optimization algorithms motivated by machine learning applications. In particular, we investigate dimensionality reduction techniques in the variable/parameter domain for local and global optimization; these rely crucially on random projections. We describe and use sketching results that allow efficient projections to low dimensions while preserving using properties, as well as other useful tools from random matrix theory and conic integral geometry. We focus on functions with low effective dimensionality – that are conjectured to provide an insightful proxy for neural networks landscapes. The algorithms we discuss are stochastic, allow biased noise, adaptive parameters and have almost sure convergence.

Date: 7 January 2022 (Friday)
Time: 17:00-18:00 (Hong Kong Standard Time GMT +8)
Venue: Online Talk via Zoom (Meeting ID: 921 7177 2286, passcode: 0107)
Speaker: Prof. Coralia Cartis, University of Oxford
Host: Dr. Zaikun Zhang, The Hong Kong Polytechnic University
Click to join:
https://polyu.zoom.us/j/92171772286?pwd=MDlscnpTMWd5anZDUDYyYk9EeXk5Zz09

Click to join (Zoom)

* * * ALL ARE WELCOME * * *

For enrolment, please send your name and email to wai-yan.moon@polyu.edu.hk on or before 6 January 2022