Optimization and Learning with Zeroth-Order Stochastic Oracles

ABSTRACT - An especially challenging regime in data-driven science and engineering is when one can only query a noisy oracle that is not amenable to differentiable programming. In this talk we report on progress improving the scalability of such methods with methods that iteratively work in randomized subspaces or otherwise adapt noisy estimates. We highlight exemplar applications as well as theoretical and empirical results for these new methods and address ongoing opportunities for improved performance in practice.

Joint work with Raghu Bollapragada (https://sites.google.com/view/raghub); Kwassi Joseph Dzahini (https://www.anl.gov/profile/kwassi-joseph-dzahini); Xiaoqian Liu (https://xiaoqian-liu.github.io); Matt Menickelly (https://www.anl.gov/profile/matt-menickelly) and others.

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SPEAKER BIO – Stefan Wild is Senior Scientist and Director of the Applied Mathematics and Computational Research (AMCR) Division at Lawrence Berkeley National Laboratory, and an adjunct faculty member in Industrial Engineering and Management Sciences and a senior fellow in NAISE at Northwestern University. Wild's primary research interests focus on developing model-based algorithms and software for challenging numerical optimization problems and automated learning. Wild is especially interested in advancing open science and engineering in areas underserved by the current status quo.

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