EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

Overview of Adaptive Optimization Methods for Stochastic Oracles

ABSTRACT – Continuous optimization is a mature field, which has recently undergone major expansion and change. One of the key new directions is the development of methods that do not require exact information about the objective function.

Nevertheless, the majority of these methods, from stochastic gradient descent to "zero-th order" methods use some kind of approximate first order information.

We will introduce a general definition of a stochastic oracle and show how this definition applies in a variety of familiar settings, including simple stochastic gradient via sampling, traditional and randomized finite difference methods and more. We will overview several stochastic methods and how the general definition extends to the oracles used by these methods.

Dr. Katya Scheinberg
Professor and Director of Graduate Studies
School of Operations Research and Information Engineering
Cornell University

SPEAKER BIO – Katya Scheinberg is a Professor and Director of Graduate Studies at the School of Operations Research and Information Engineering at Cornell University.

Prior to joining Cornell she was the Harvey E. Wagner Endowed Chair Professor at the Industrial and Systems Engineering Department at Lehigh University.

She attended Moscow University for her undergraduate studies and received her PhD degree from Columbia University. She worked at the IBM T.J. Watson Research Center as a research staff member for over a decade before joining Lehigh in 2010. Katya's main research areas are related to developing practical algorithms (and their theoretical analysis) for various problems in continuous optimization, such as convex optimization, derivative free optimization, machine learning, quadratic programming, etc.

She is an Informs Fellow, a recipient of the Lagrange Prize from SIAM and MOS, the Farkas Prize from Informs Optimization Society and the Outstanding Simulation Publication award from Informs Simulation Society. Katya is currently the editor-in-chief of Mathematics of Operations Research, co-editor of Mathematical Programming and the Chair of SIAM Activity Group on Optimization.

USC Viterbi
School of Engineering
Daniel J. Epstein Department of Industrial and Systems Engineering

TUESDAY, SEPTEMBER 27, 2022
3:30 PM – 4:50 PM
USC ANDRUS GERONTOLOGY CENTER (GER), ROOM 206