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Anna Ma* (annama@ucsd.edu). *Variants of the Randomized Kaczmarz Algorithm and their Applications.*

Nowadays, data is exploding at a faster rate than computer architectures can handle. For that reason, mathematical techniques to analyze large-scale data need be developed. Stochastic iterative algorithms have gained interest due to their low memory footprint and adaptability for large-scale data. In this talk, we will present the Randomized Kaczmarz algorithm for solving extremely large linear systems of the form $Ax=y$. In the spirit of large-scale data, this talk will act under the assumption that the entire data matrix A cannot be loaded into memory in a single instance. We consider different settings including when a only factorization of A is available, when A is missing information, and a sparse, time-varying model. We will also present applications of these Kaczmarz variants to problems in data science and signal processing. (Received January 20, 2019)