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Editorial

Special Issue: Stochastic Algorithms and Their Applications

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Stochastic algorithms are at the core of machine learning and artificial intelligence. Stochastic gradient descent and Expectation–Maximization (EM)-like algorithms, among others, offer incredible tools to calibrate statistical models or deep networks. Their studies are of particular interest to ensure guarantees on their results, improve their convergence speed and optimize their use in machine learning problems.

The research fields of these algorithms are extremely diverse, ranging from theoretical optimization, computer vision (CV) or natural language processing (NLP), and targeting emerging applications, such as transport (for example, for autonomous vehicles) or medical data analysis (for example, to propose decision support systems).

To encourage further original research on stochastic algorithms and their applications, we set up a Special Issue of the MDPI journal *Algorithms* devoted to this topic. The call for papers invited articles dealing with all the aspects where stochastic algorithms are used. This includes the foundations of stochastic algorithms to promote new algorithms [1,2] and their theoretical and practical analysis, the estimation of new statistical models [3–5], and the introduction of topology and geometry into models to better reflect the data structures [6,7]. New applied researches were also considered [8,9], as stochastic algorithms are at the core of applicative use cases. Finally, a review paper on performances of stochastic programing [10] ends this Special Issue.

All of the articles submitted to the Special Issue were evaluated by invited experts. In many cases, their detailed comments improved the technical strength and the quality of presentation. After several rounds of revisions and reviewing, ten of the submitted articles were accepted for inclusion in the Special Issue.

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