Session 1: Optimization Methods
11:00 – 11:20, 14th, July

Frank-Wolfe Algorithms for SVMs: Complexity and Practical Strategies
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Frank-Wolfe algorithms are classical first-order methods for solving concave optimization problems on the unit simplex and other convex polyhedra. The last years have seen a surge of interest in these procedures from the machine learning community, as they allow to efficiently compute approximate solutions with a certifiable sparsity at an overall cost proportional to the total number of variables. However, the complexity of the standard Frank-Wolfe iteration can still be prohibitive on large problems. This is often the case, for example, in SVM learning. As such, some form of stochastic/randomized iteration, e.g. to select a fixed-size set of variables at each optimization step, is essential in practice. We discuss some open problems related to this issue, and present a few preliminary experimental results.