

Large-Scale Optimization

The idea that includes modeling and subsequent optimization of application execution on large scale parallel and distributed systems. The model considers performance, reliability and power consumption. This incorporates simple and easy modeling of various classes of applications while reflecting key parameters of both the applications and targeted systems, namely, clusters and volunteer-based systems. This presents simulation of application execution on particular systems, optimization of assignment of several applications onto a complex environment that consists of several clusters and volunteer-based systems as well as for assessment of best future system configurations for execution of pre-defined application sets. A primal-dual method to solve L_1 -type non-smooth optimization problems independently of the grid size. We apply these results to two important problems: The Rudin–Osher–Fatemi image denoising model and the L_1 earth mover's distance from optimal transport.