

## A LINE SEARCH METHOD WITH VARIABLE SAMPLE SIZE

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Minimization of unconstrained objective function in the form of mathematical expectation is considered. Sample Average Approximation - SAA method transforms the expectation objective function into a real-valued deterministic function using large sample in each iteration and thus deals with deterministic function minimization. The main drawback of this approach is its cost. A large sample of the random variable that defines the expectation must be taken in order to get reasonably good approximation and thus the sample average approximation method assumes very large number of functional evaluations. We will present a line search strategy that uses variable sample size and thus makes the process significantly cheaper. Two measures of progress - lack of precision and functional decrease are calculated at each iteration. Based on this two measures a new sample size is determined. The rule we will present allows us to increase or decrease the sample size in each iteration until we reach some neighborhood of the solution. After that the maximal sample size is used so the variable sample size strategy generates the solution of the same quality as SAA method but with significantly smaller number of functional evaluations.