Integrated machine learning and optimization in Python

Master of Science Research Project

August 2019

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Table Pseudo Code of Algorithm

Read boundaires of variables $x^0 \in \Re^n$;
Initialize starting point;
Initialize radius r and size of sampling points num;
initialize a blank list to store optimal values;
repeat
  shuffle the order of variables;
  for index i_1 to $i_k \in 1, 2 \ldots n$
    repeat
      Sampling along single direction within range $[x_{i_k} - r, x_{i_k} + r]$
      Call Alamopy to get the surrogate model based on sampling data points;
      Call Baron to get the optimal point of surrogate model;
      if the difference between actual and predicted values of minima is big:
        decrease r; increase num;
      else:
        increase r; decrease num;
    until the actual value $\approx$ predicted value obtained by Baron;
    update x_{i_k} with new optimal point; append optimal value to solution list;
until termination is satisfied;

6 Results and Discssion