Optimal location query based on *k* nearest neighbours

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Problems & Algorithm

- **Problem**:
  - The problem of KNN-based optimal location query (KOLQ) considers the K nearest servers of clients and labeled servers.
  - The problem RKOLQ aims at relocating an existing server to an optimal location.
- **Algorithm**: Two location analysis algorithms are proposed for these problems, which incorporates some new pruning techniques based on the concept of KNLC.

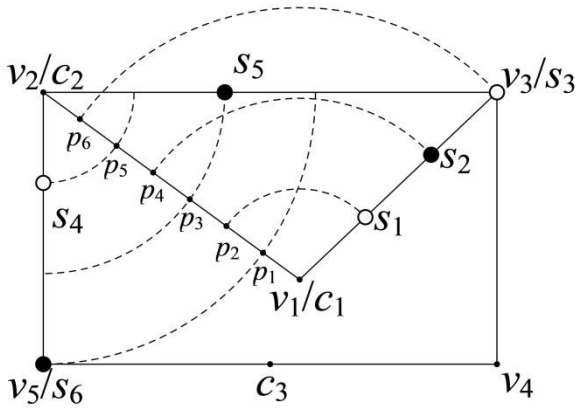

Fig.1. A running example of KNLC

Main Experiment Results

- The baseline algorithm takes about 15.55 hours while our algorithm only needs about 30 seconds on the dataset of SF with 4,000 servers and 400,000 clients.
- Our algorithm with the upper bounder NewUPP is faster than the upper bounds UPP, as shown in Fig.2. The computation cost of NewUpp is less than that of Upp. Besides, NewUpp has comparable pruning power compared to Upp even though it is not as tight as Upp.

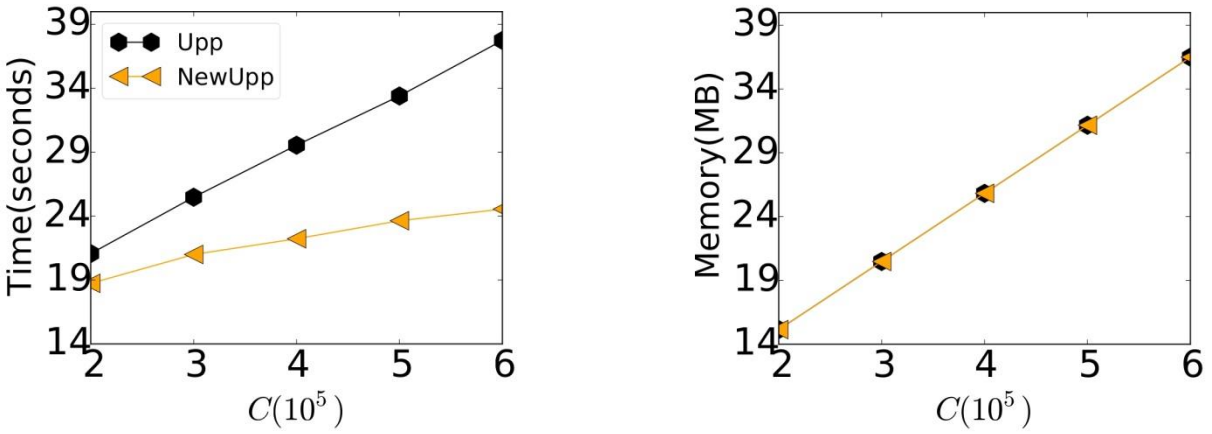

Fig.2. Effect of $|C|$ on SF dataset for Upp and NewUpp