**Applying Simulated Annealing and Parallel Computing to the Mobile Sequential Recommendation**

**Abstract:**

We speed up the solution of the mobile sequential recommendation (MSR) problem that requires searching optimal routes for empty taxi cabs through mining massive taxi GPS data. We develop new methods that combine parallel computing and the simulated annealing with novel global and local searches. While existing approaches usually involve costly offline algorithms and methodical pruning of the search space, our new methods provide direct real-time search for the optimal route without the offline preprocessing. Our methods significantly reduce computational time for the high dimensional MSR problems from days to seconds based on the real-world data as well as the synthetic ones. We efficiently provide solutions to MSR problems with thousands of pick-up points without offline training, compared to the published record of 25 pick-up points.

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System : Pentium Dual Core.
* Hard Disk : 120 GB.
* Monitor : 15’’ LED
* Input Devices : Keyboard, Mouse
* Ram : 1 GB

**SOFTWARE REQUIREMENTS:**

* Operating system : Windows XP/UBUNTU.
* Implementation : NS2
* NS2 Version : 2.28
* Front End : OTCL (Object Oriented Tool Command  Language)
* Tool : Cygwin (To simulate in Windows OS)