Competitive ACS: Big Data Experiments

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MSc in Big Data

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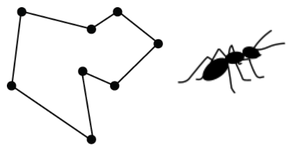
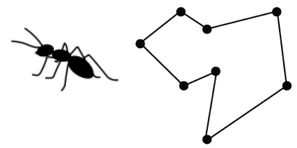


Problem: Travelling Salesman Problem (TSP)
Solution methods: Random, Greedy, Ant Colony System (ACS), Modified ACS with competitive repulsion
Data sources: TSPLIB, synthetic randomly generated data sets



Solver: *Python*
Generalised, parameters passed in.
Rapid development.
Integrates well with other technologies.

Distributed Processing: *Condor*
Condor will arrange for the computation across a number of nodes.
Speed provided by scale, batch jobs can be run without supervision.

Results Database: *mongodb*
No messy awkwardly named folder structures and files.
Can keep relevant metadata with solution.
Can handle large volumes of input data.

```
{problem: "TSP001",
 definition: [[12,13,14],[2,3,4],[6,5,9]],
 solution: [{solver: "ACS",
             solution: [1,2,3],
             machine: "Atari 800XL"}
            ,...]
}
```

Analysis: *R, Shiny*
Analysis will be driven by R, connecting to the database to extract information.
Time permitting: Shiny dashboard.