**CS3201 Project Proposal**

Shawn Sabraw, 201305083

Tyler Beckett, 201125416

Xiaochuan Huang, 201525003

Zhiwei Liu, 201604402

1. **the design of your EA**
   1. The representation of each permutation will be a list of each coordinate point in the given file.
   2. The evaluation will calculate the fitness from each point in order of the list.
   3. For mutation, we will be using the inversion mutation.
   4. Recombination will consist of the cut and cross-fill method that will allow us to preserve adjacency of the neighboring cities.
2. **what techniques you would like to use to advance your EA**
   1. Improved mutation/crossover, this will change our mutation step size based on how well the algorithm is performing.
3. **plan of runtime optimization of your EA**
   1. Make use of the Python Graph data structure in order to keep track of already traveled pathways that will cut down computation time in the evaluation.
   2. Use different implementations of mutation, recombination to optimize the runtime.
4. **Team management(task distribution among members in your team)**
   1. Equally distributed style of work. Everyone will take part in coding and documentation. Each member will be able to test, contribute and change each part in the EA, as well as managing different sections in the write up.