

# Assignment 1: Evolutionary Algorithm in action

## CS 451: Computational Intelligence

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Our chromosome structure is a dictionary with the key being the fitness of the individual

### 1. Travelling Sales Person

The following are plots for respective selection schemes. The first one is for the parent selection and the second one is for the survival selection.

#### Fitness Proportional Scheme and Truncation

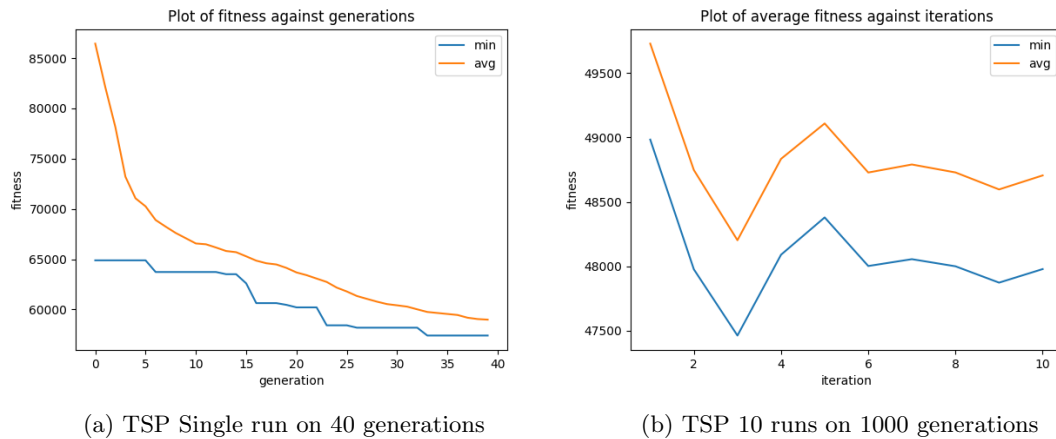
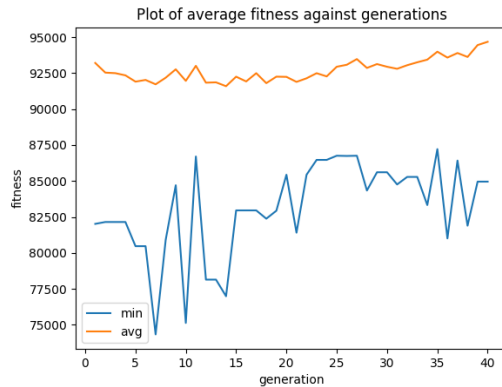


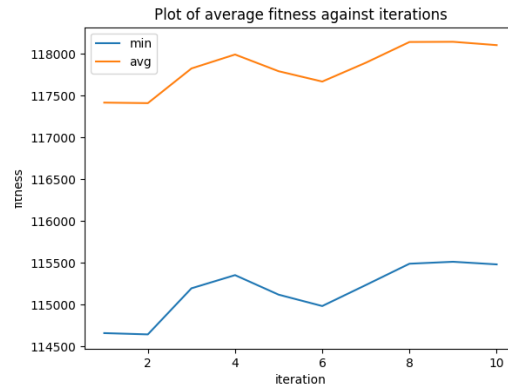
Figure 1: Note: Fitness is the distance

As we can our second run was the best one out of the 10.

### Fitness Proportional Scheme and Binary Tournament Selection Scheme



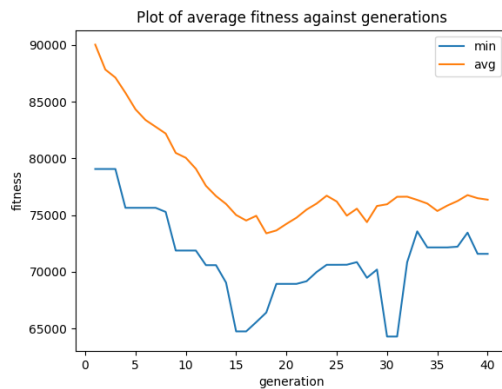
(a) TSP Single run on 40 generations



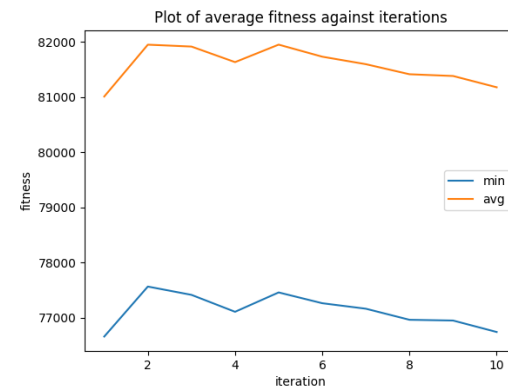
(b) TSP 10 runs on 1000 generations

Figure 2: Note: Fitness is the distance

### Fitness Proportional Scheme and Random Selection Scheme



(a) TSP Single run on 40 generations



(b) TSP 10 runs on 1000 generations

Figure 3: Note: Fitness is the distance

### Fitness Proportional Scheme and Rank Based Selection Scheme

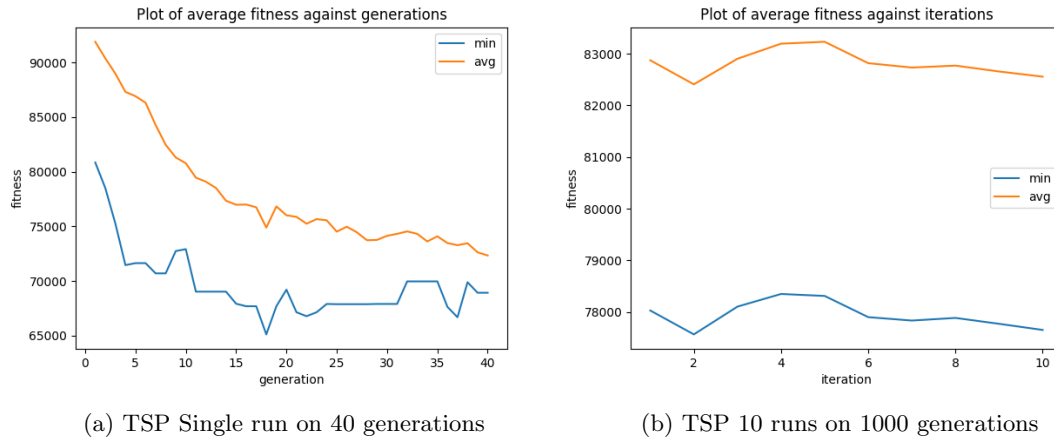


Figure 4: Note: Fitness is the distance

### Rank Based Selection and Truncation

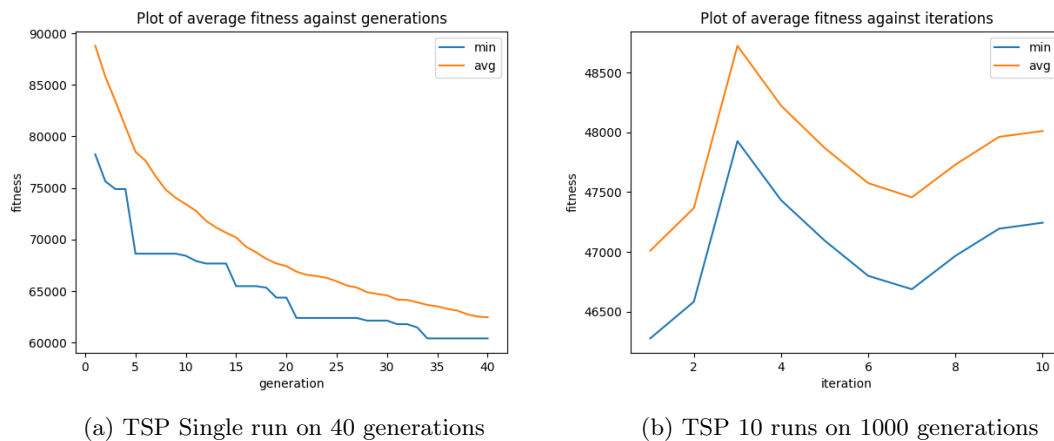


Figure 5: Note: Fitness is the distance

## 2. Knapsack Problem

### Binary Tournament and Truncation

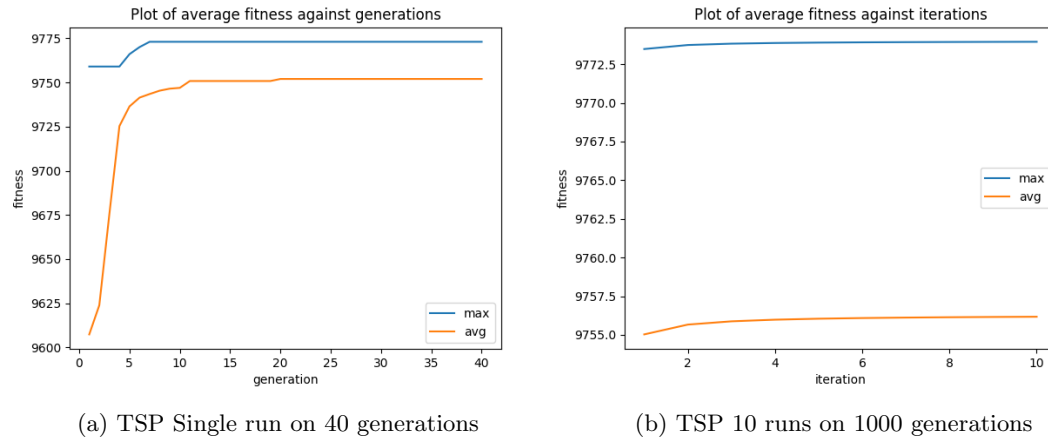


Figure 6: Note: Fitness is the distance

### Binary Tournament and Rank Based Selection Scheme

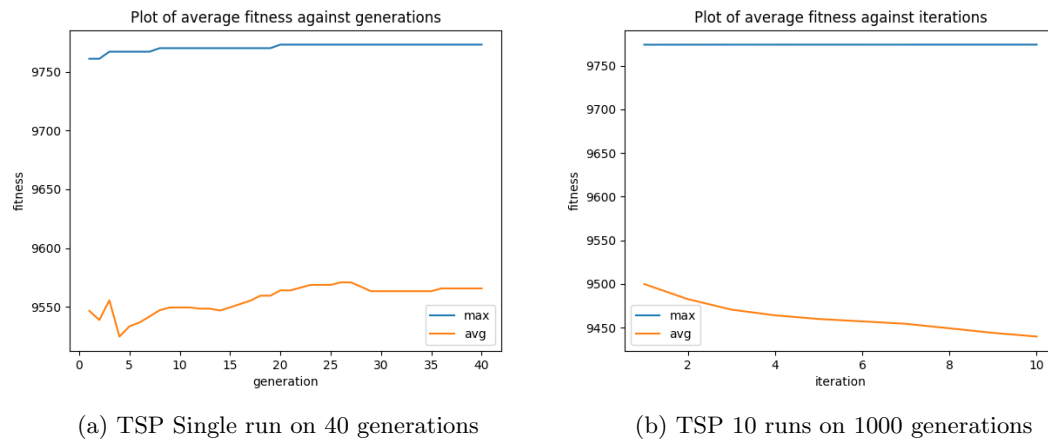


Figure 7: Note: Fitness is the distance

## 3. Graph Coloring Problem