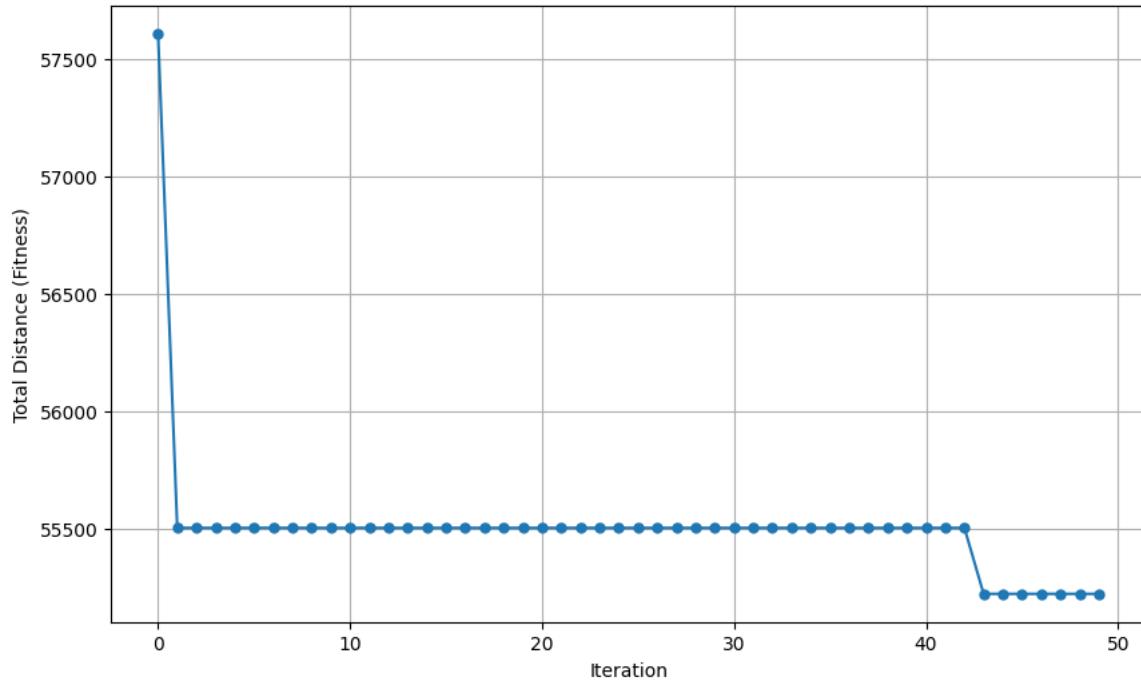


```

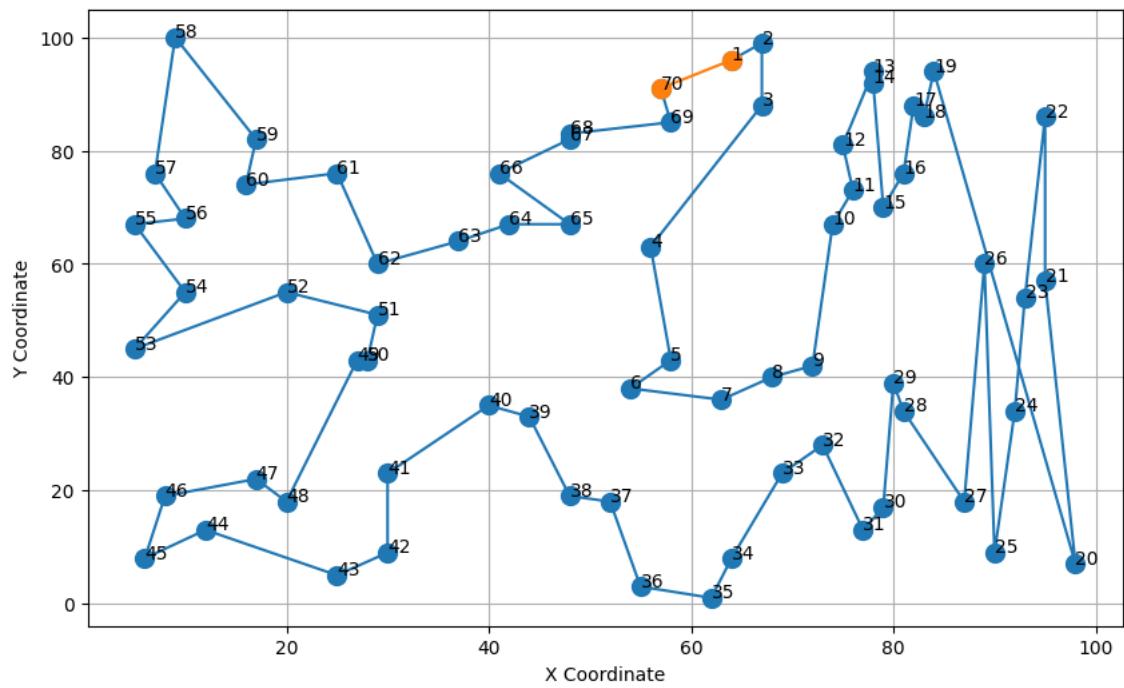
Running simulation with dataset=st70, decay_rate=0.001, k=0.1, m=2,
epsilon=1e-10
Loaded coordinates for 70 cities from st70.
Best Fitness: 55220.42593814333
Best Path: [0, 35, 22, 52, 5, 40, 41, 17, 3, 65, 21, 37, 28, 12, 62, 58,
30, 68, 69, 54, 14, 34, 23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 2, 13, 19, 29,
43, 67, 42, 16, 8, 26, 45, 44, 24, 38, 60, 39, 33, 20, 11, 32, 61, 53, 47,
66, 10, 63, 64, 55, 50, 59, 51, 9, 4, 49, 57, 36, 46, 15]
Total Computation Time: 213.67712259292603 seconds
Average Computation Time per Iteration: 0.12389661312103271 seconds
Memory Usage: 39200 bytes

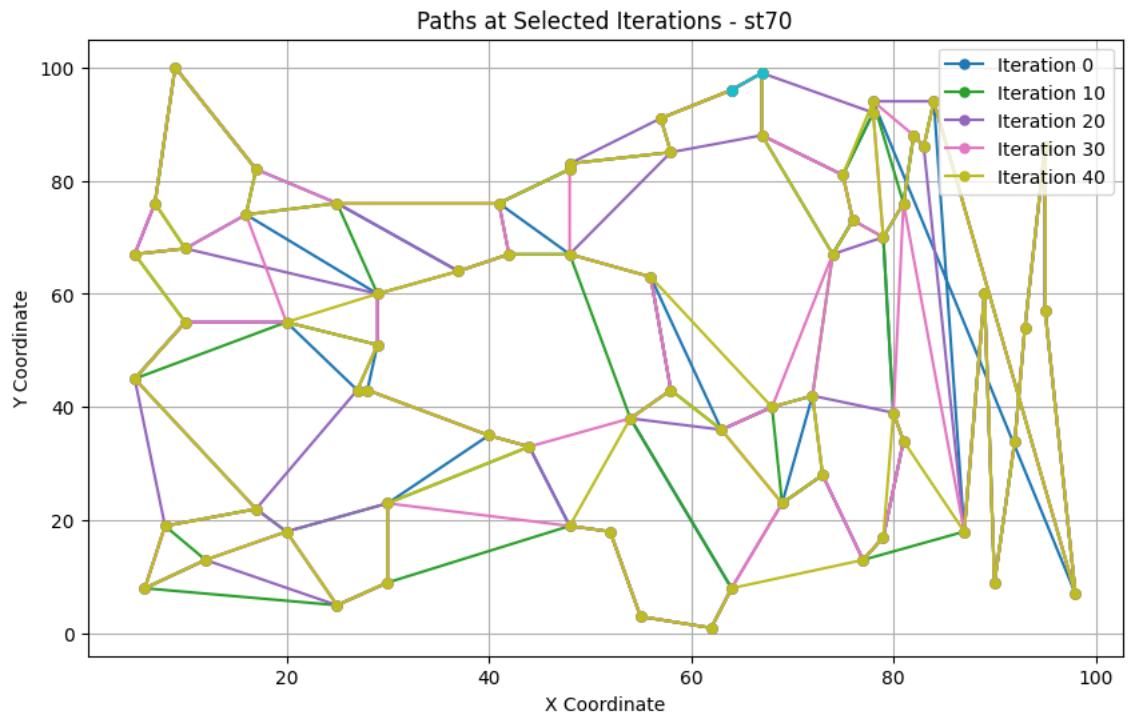
```

Best Fitness over Iterations - st70



Best Path - st70





Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=2, epsilon=1e-10

Loaded coordinates for 70 cities from st70.

Best Fitness: 55237.41130795486

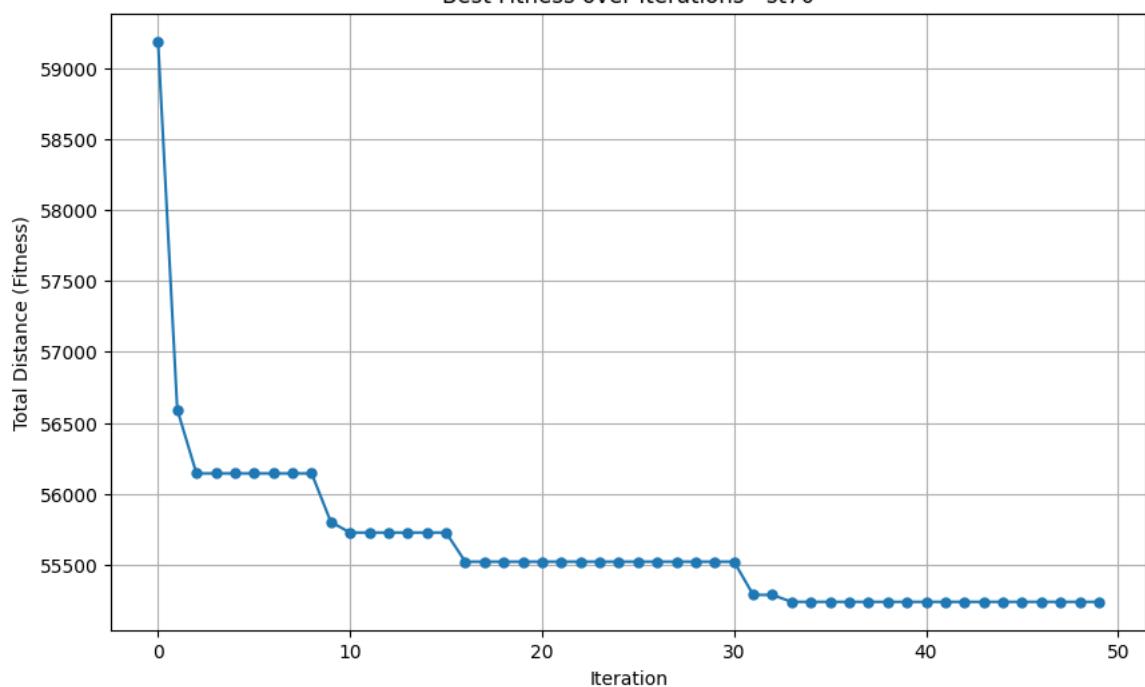
Best Path: [0, 15, 46, 52, 4, 57, 36, 49, 9, 51, 59, 50, 55, 64, 63, 10, 66, 47, 53, 61, 32, 11, 20, 33, 39, 60, 38, 24, 44, 45, 26, 8, 16, 42, 67, 43, 29, 19, 13, 2, 41, 40, 5, 17, 3, 31, 27, 7, 1, 6, 25, 56, 48, 18, 23, 34, 14, 54, 69, 68, 30, 58, 62, 12, 28, 37, 21, 65, 22, 35]

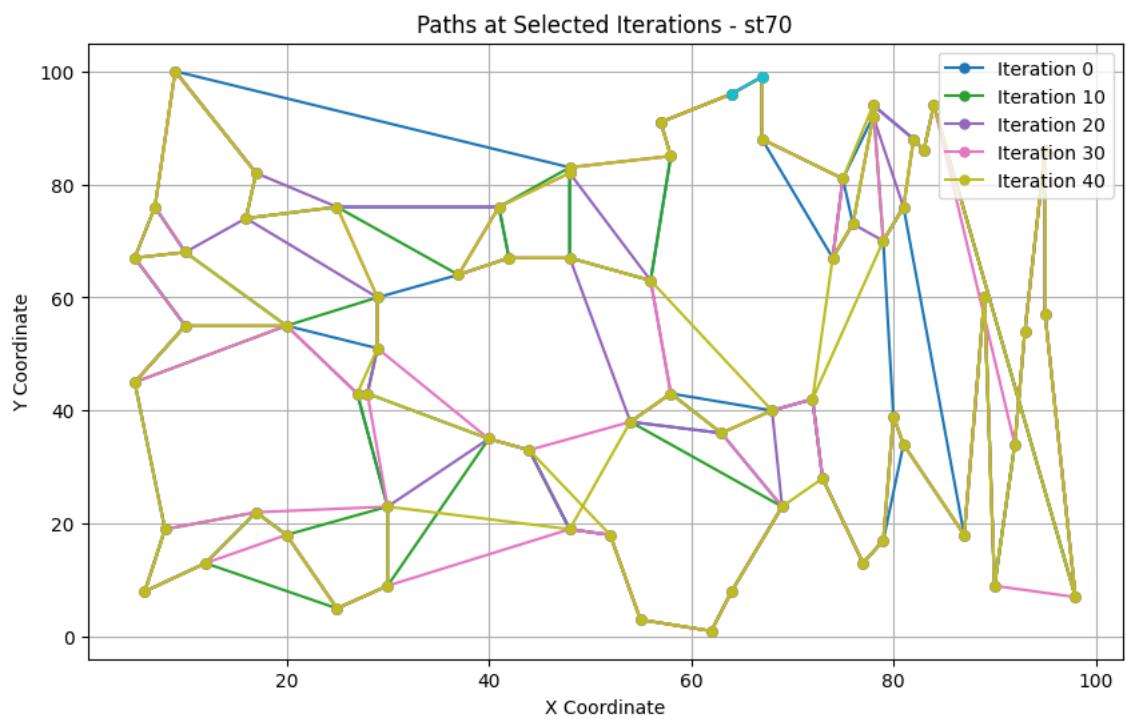
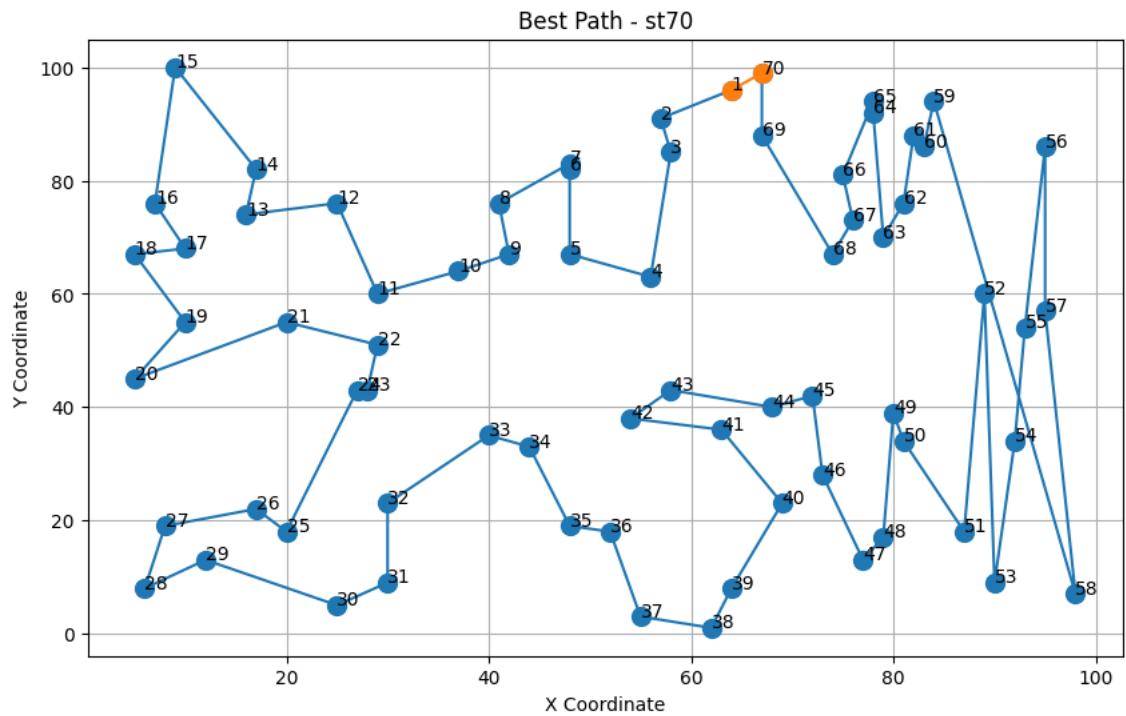
Total Computation Time: 175.9163465499878 seconds

Average Computation Time per Iteration: 0.09704659461975097 seconds

Memory Usage: 39200 bytes

Best Fitness over Iterations - st70

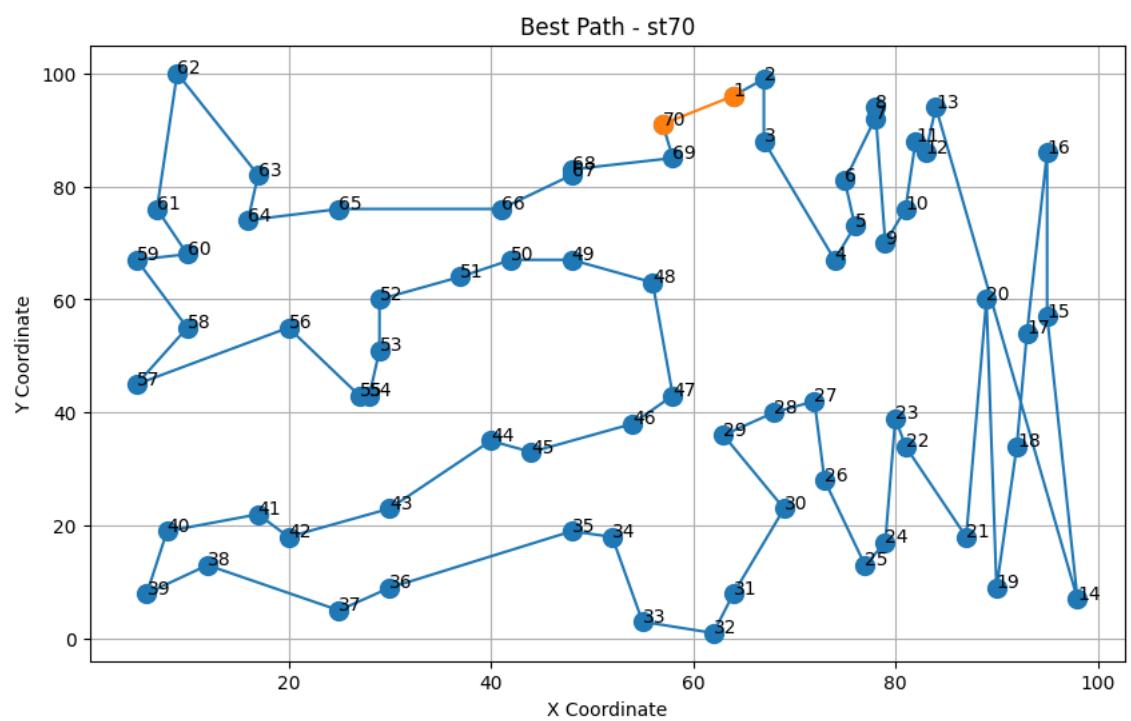
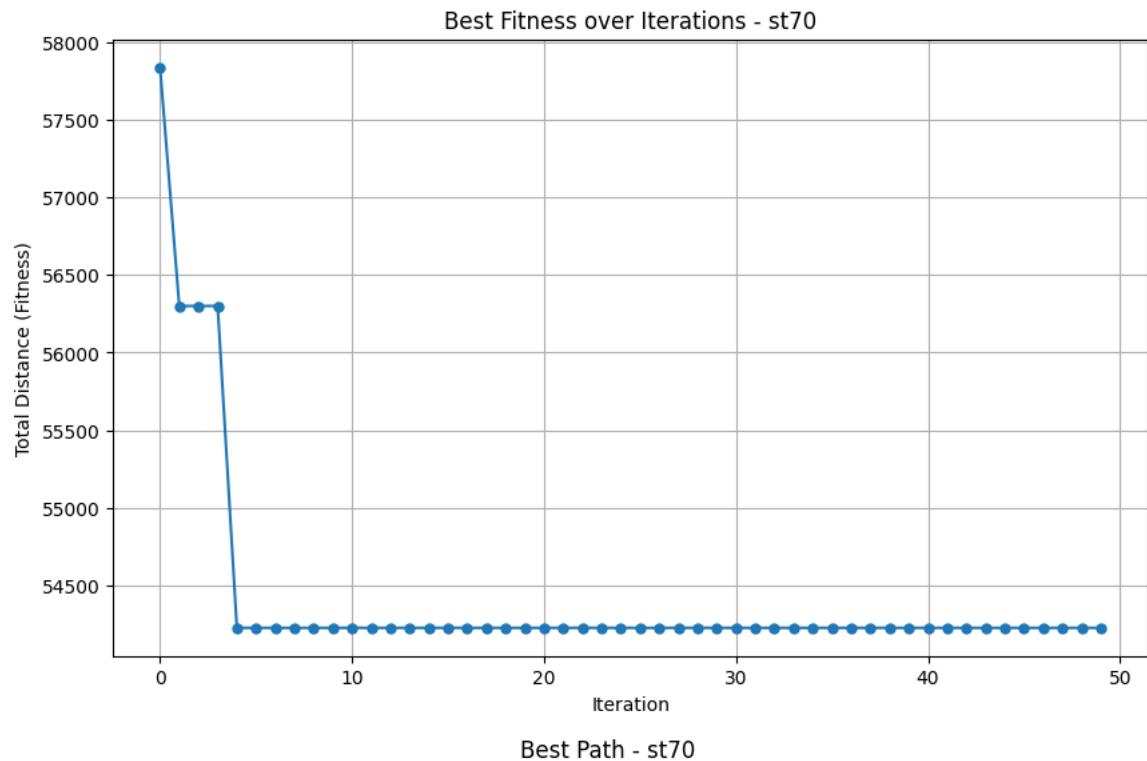


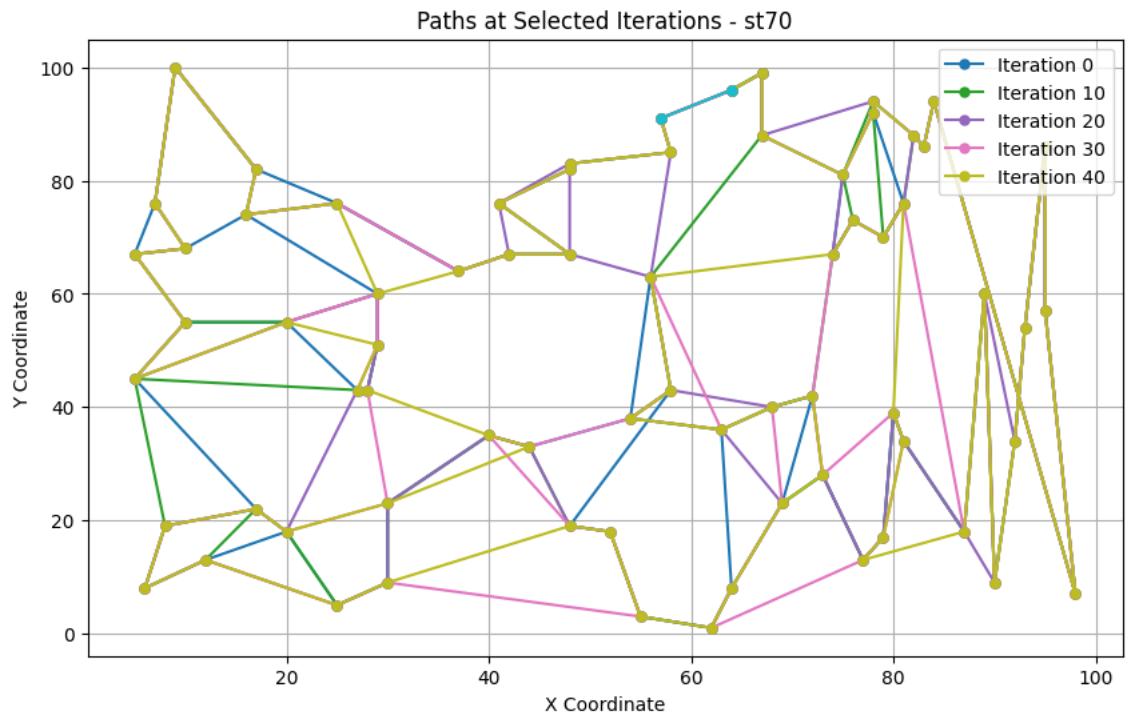


```

Running simulation with dataset=st70, decay_rate=0.1, k=0.1, m=2,
epsilon=1e-10
Loaded coordinates for 70 cities from st70.
Best Fitness: 54225.36804569608
Best Path: [0, 35, 22, 65, 21, 37, 12, 28, 62, 58, 30, 68, 69, 54, 14, 34,
23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 3, 17, 41, 2, 13, 19, 29, 43, 67, 26,
45, 44, 24, 38, 60, 39, 8, 16, 42, 40, 5, 52, 4, 9, 51, 59, 11, 20, 33, 32,
61, 53, 47, 66, 10, 63, 64, 55, 50, 49, 57, 36, 46, 15]
Total Computation Time: 190.19902420043945 seconds
Average Computation Time per Iteration: 0.10258942127227783 seconds
Memory Usage: 39200 bytes

```





Running simulation with dataset=st70, decay_rate=0.00020408163265306123, k=0.1, m=2, epsilon=1e-10

Loaded coordinates for 70 cities from st70.

Best Fitness: 55112.697816908374

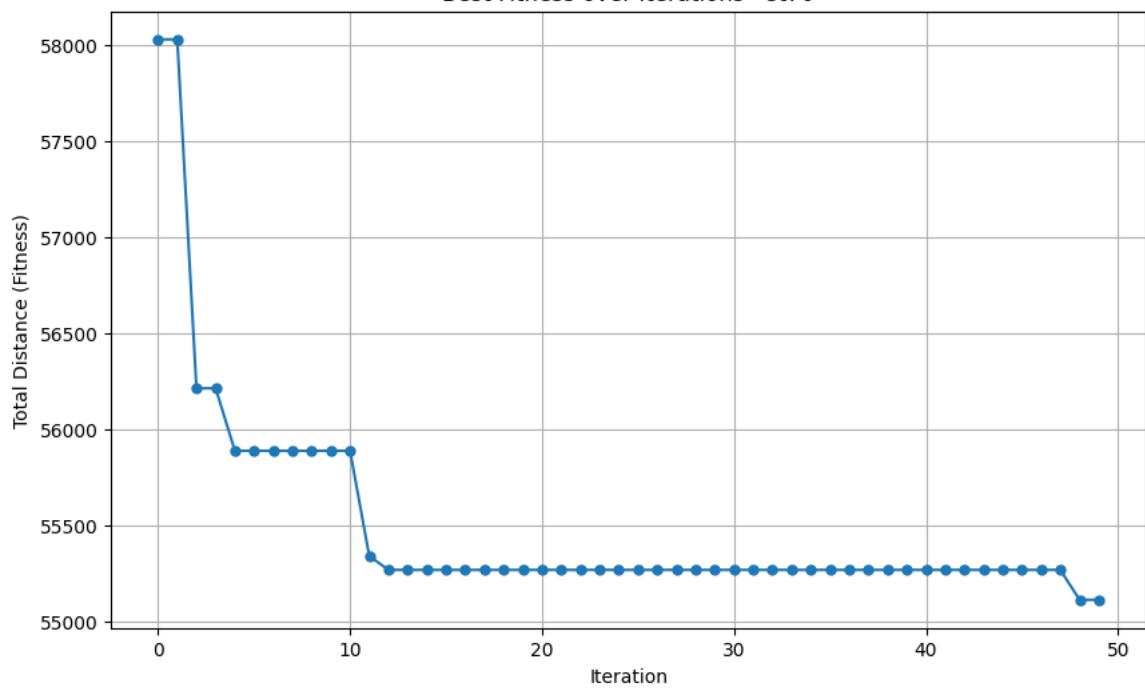
Best Path: [0, 35, 22, 52, 4, 9, 51, 59, 11, 33, 20, 16, 42, 40, 5, 41, 17, 3, 65, 21, 37, 28, 12, 62, 58, 30, 68, 69, 54, 14, 34, 23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 2, 13, 19, 29, 43, 67, 8, 26, 45, 39, 60, 44, 24, 38, 61, 53, 32, 66, 47, 10, 63, 64, 55, 50, 49, 57, 36, 46, 15]

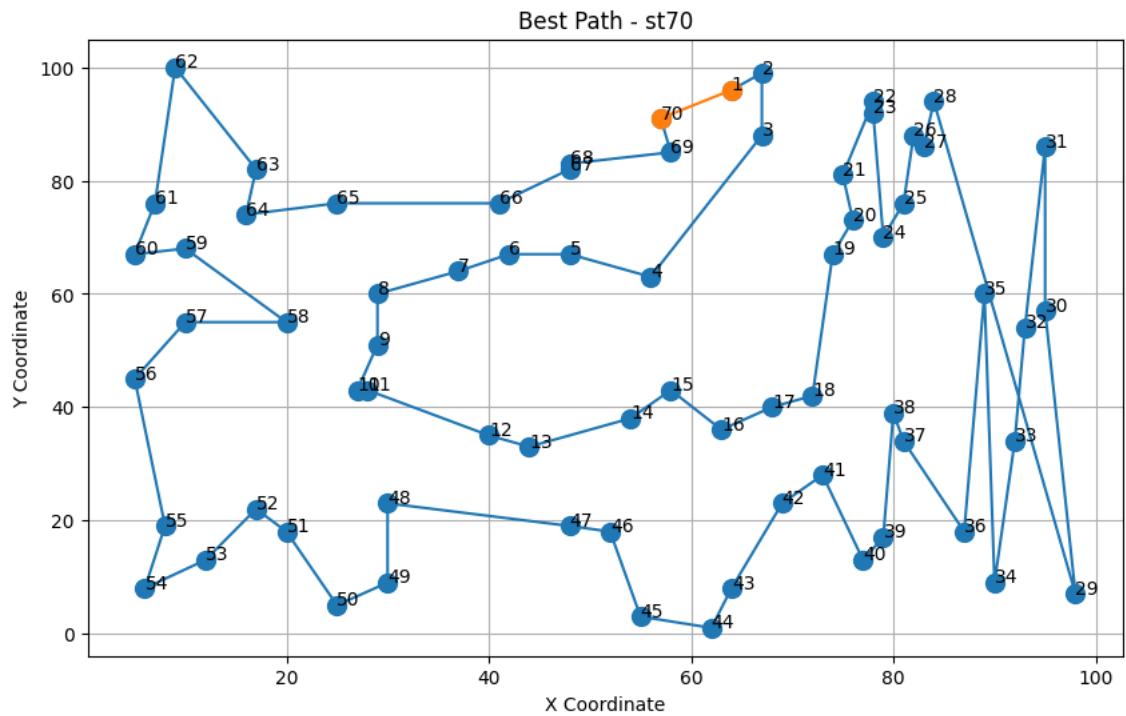
Total Computation Time: 182.06178450584412 seconds

Average Computation Time per Iteration: 0.09941840648651123 seconds

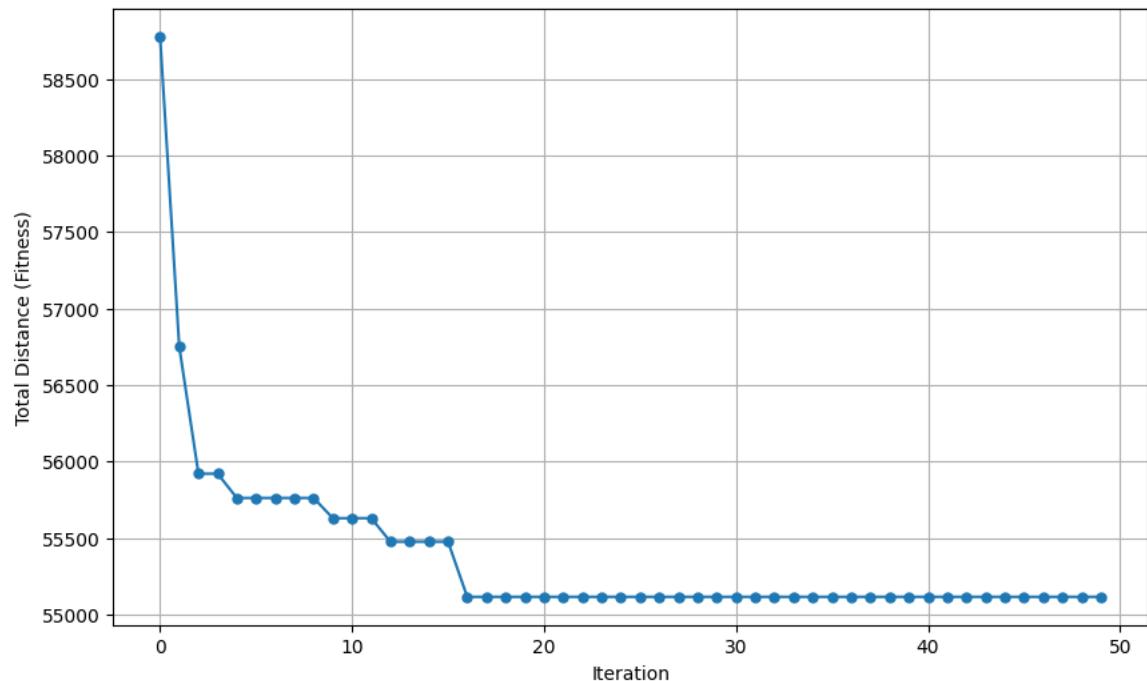
Memory Usage: 39200 bytes

Best Fitness over Iterations - st70

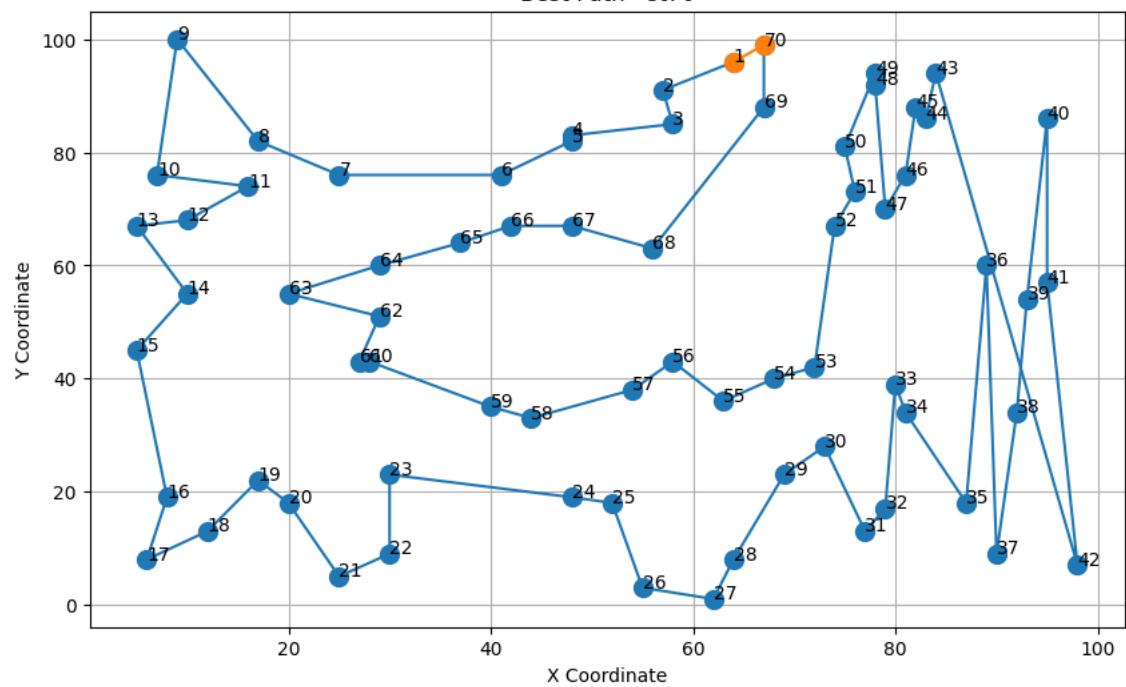


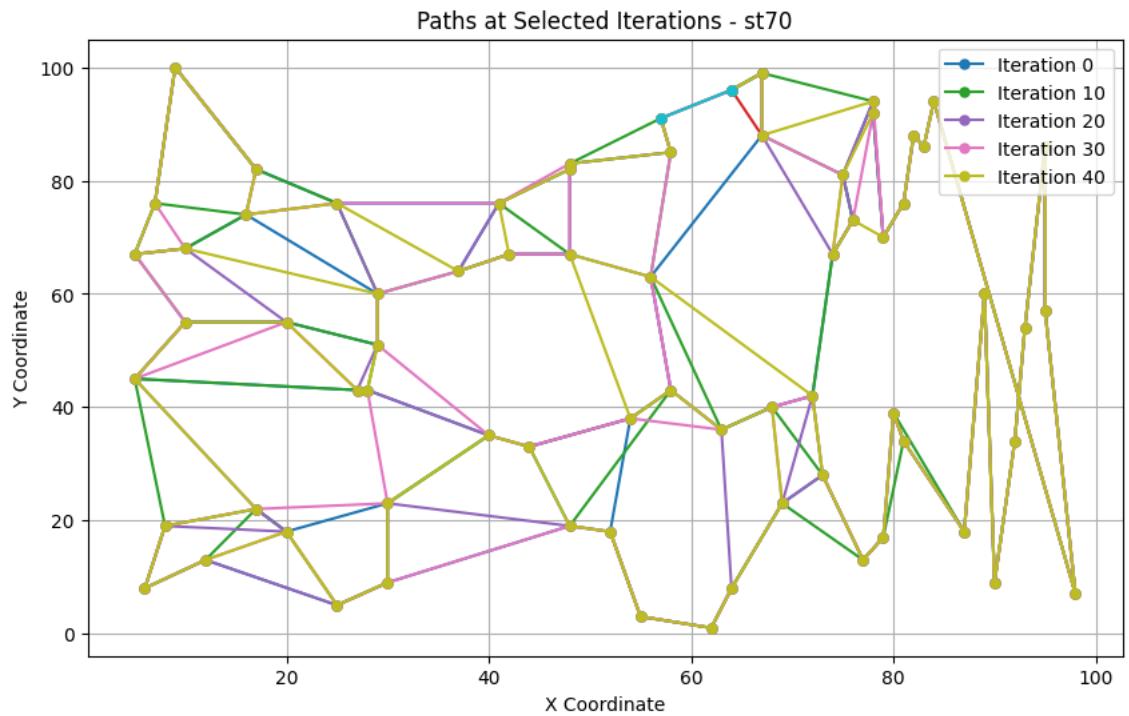


Best Fitness over Iterations - st70



Best Path - st70





```
Running simulation with dataset=st70, decay_rate=0.01, k=0.05, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 70 cities from st70.
```

```
Best Fitness: 55055.90076212937
```

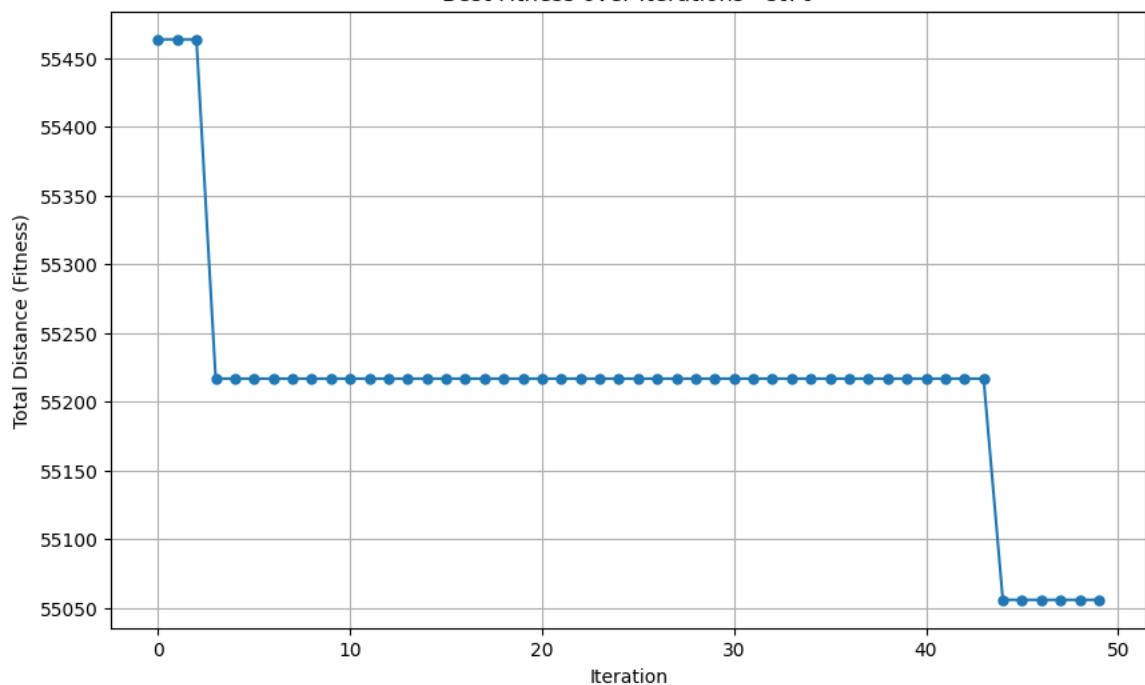
```
Best Path: [0, 15, 46, 36, 57, 49, 51, 9, 4, 52, 5, 40, 42, 16, 20, 33, 11, 32, 59, 50, 64, 63, 10, 55, 66, 47, 53, 61, 38, 24, 44, 60, 39, 45, 26, 8, 67, 43, 29, 19, 13, 2, 41, 17, 3, 31, 27, 7, 1, 6, 25, 56, 48, 18, 23, 34, 14, 54, 69, 68, 30, 58, 62, 12, 28, 37, 21, 65, 22, 35]
```

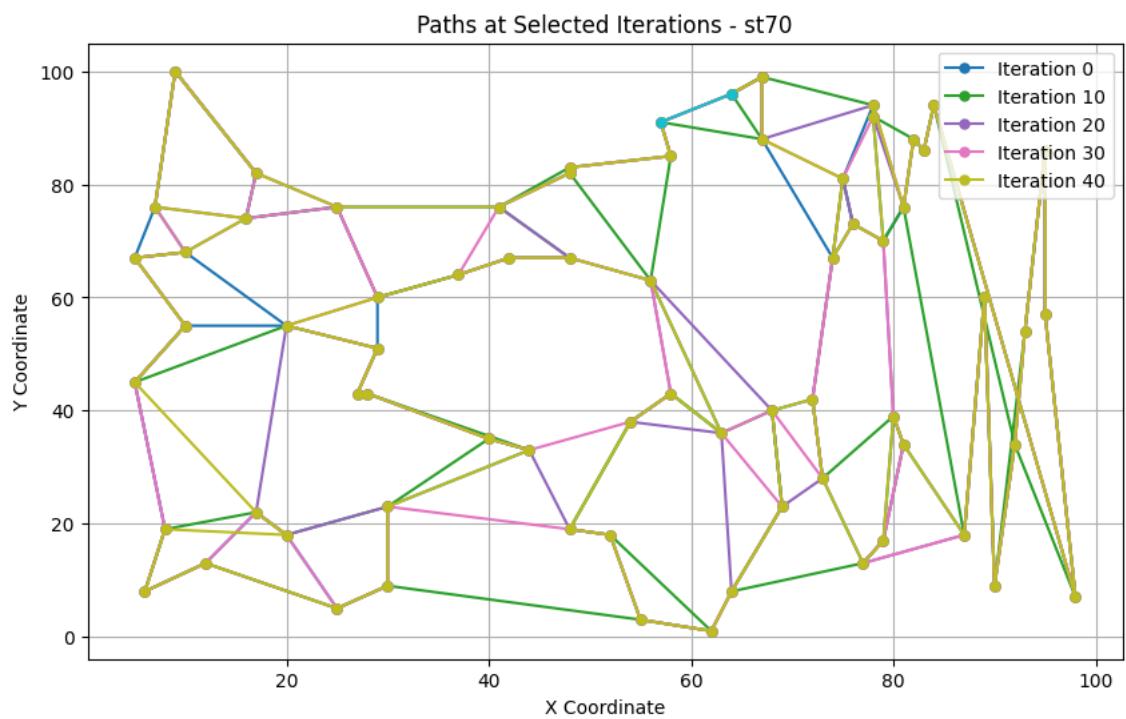
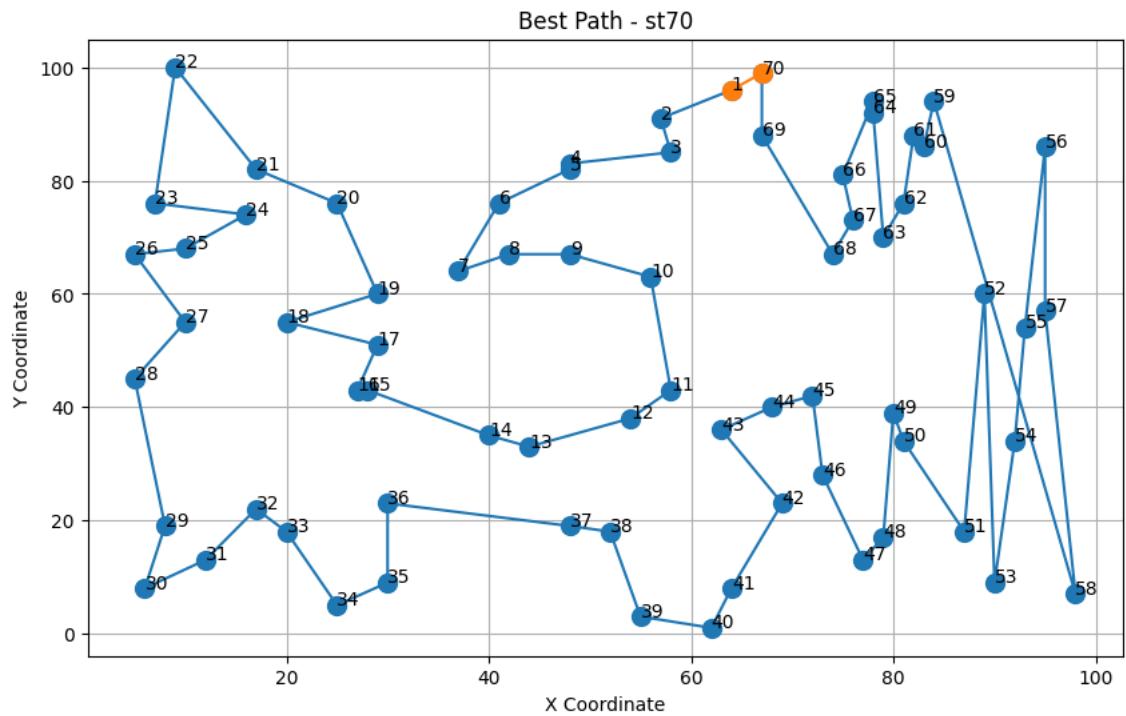
```
Total Computation Time: 172.7571361064911 seconds
```

```
Average Computation Time per Iteration: 0.10269386768341064 seconds
```

```
Memory Usage: 39200 bytes
```

Best Fitness over Iterations - st70





```
Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 70 cities from st70.
```

```
Best Fitness: 54217.79768320145
```

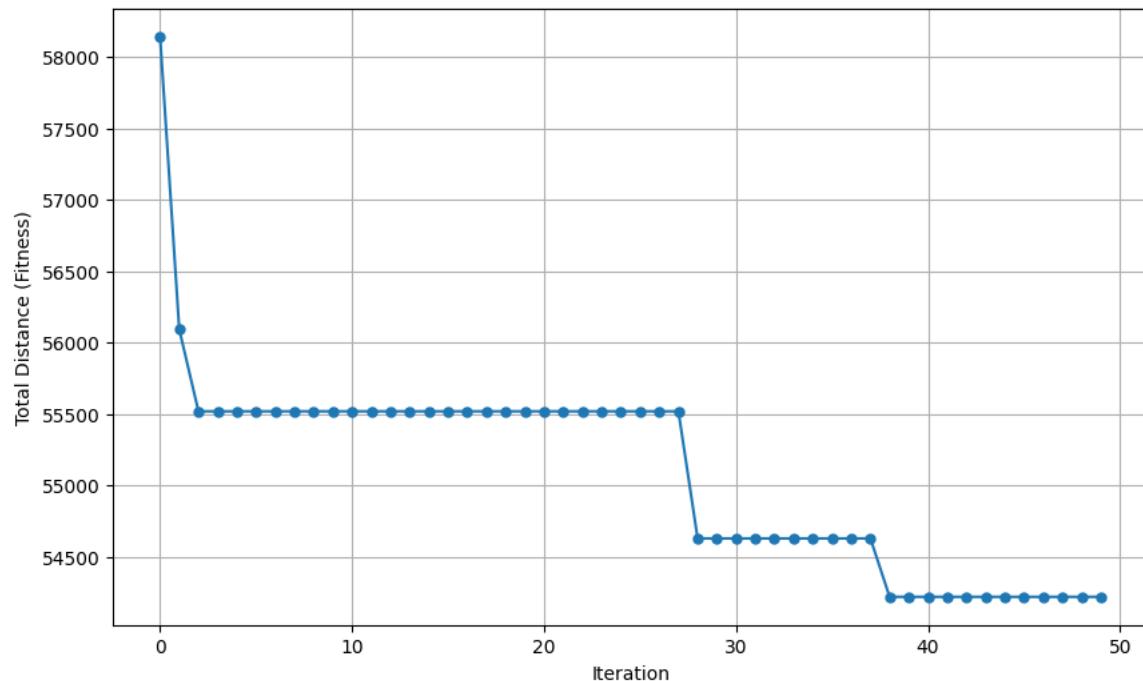
```
Best Path: [0, 35, 22, 65, 21, 37, 28, 12, 62, 58, 30, 68, 69, 54, 14, 34,
23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 3, 17, 41, 2, 13, 19, 29, 43, 67, 26,
45, 44, 24, 38, 60, 39, 8, 16, 42, 40, 5, 52, 4, 9, 51, 59, 11, 20, 33, 32,
61, 53, 47, 66, 10, 63, 64, 55, 50, 49, 57, 36, 46, 15]
```

```
Total Computation Time: 190.64186024665833 seconds
```

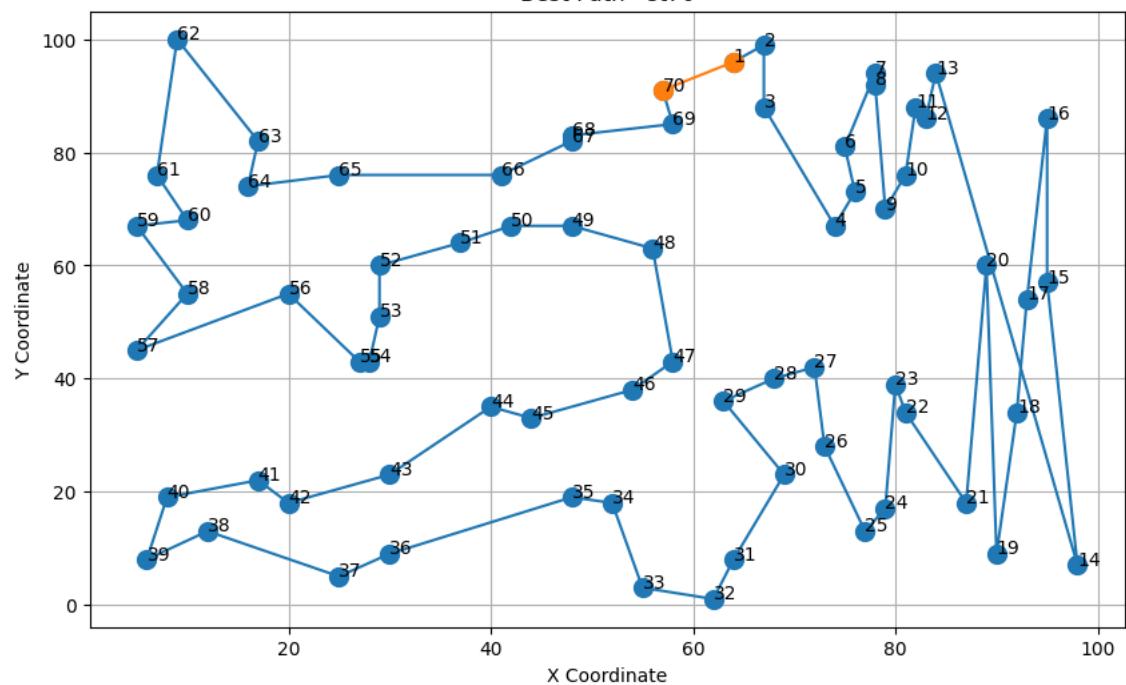
```
Average Computation Time per Iteration: 0.0986142635345459 seconds
```

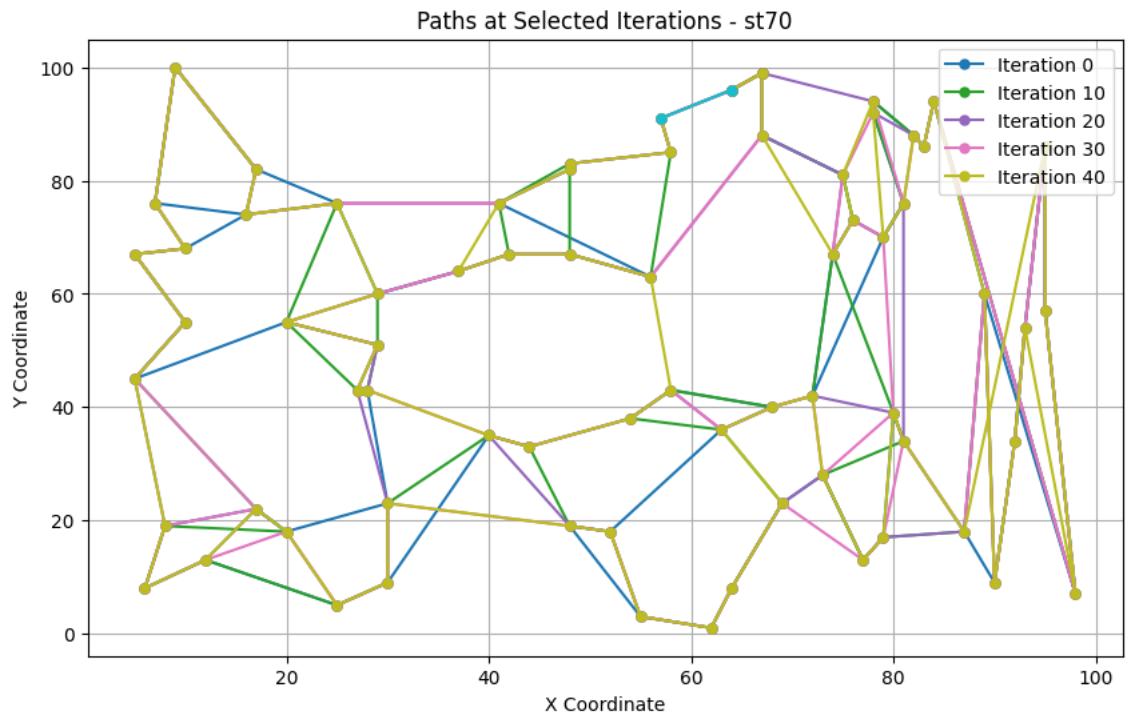
```
Memory Usage: 39200 bytes
```

Best Fitness over Iterations - st70



Best Path - st70





Running simulation with dataset=st70, decay_rate=0.01, k=0.5, m=2, epsilon=1e-10

Loaded coordinates for 70 cities from st70.

Best Fitness: 54561.357481517465

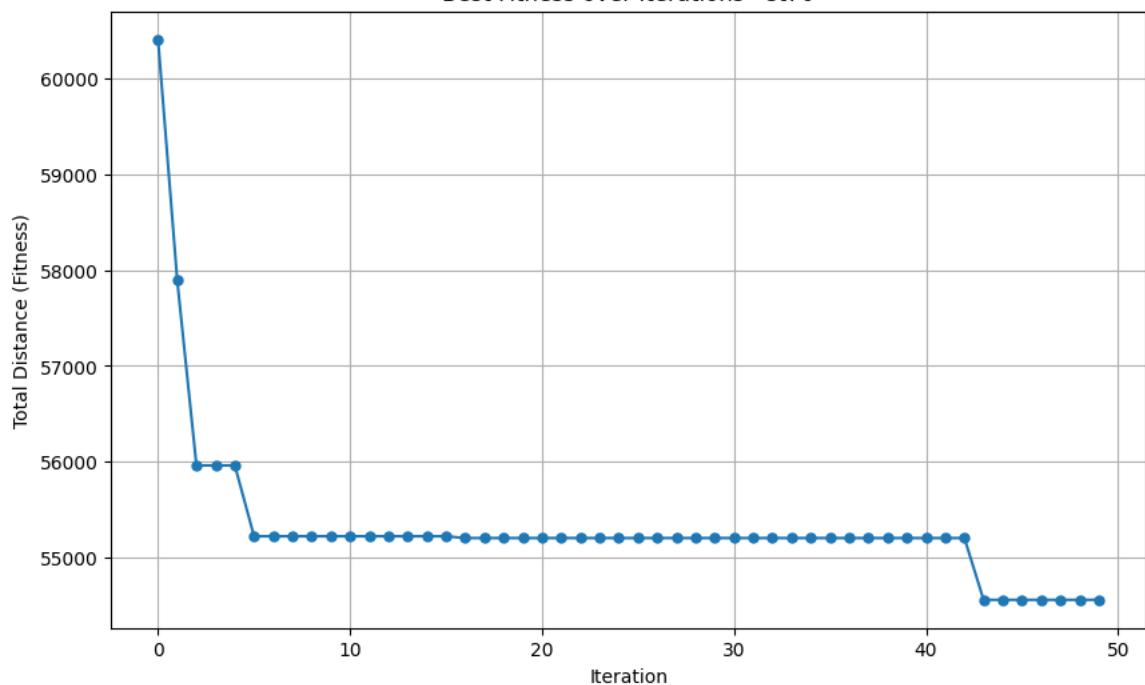
Best Path: [0, 35, 22, 65, 21, 37, 28, 12, 62, 58, 30, 68, 69, 54, 14, 34, 23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 3, 17, 41, 2, 13, 19, 29, 43, 67, 26, 45, 44, 24, 38, 60, 39, 8, 16, 42, 40, 5, 52, 4, 9, 51, 59, 32, 11, 20, 33, 61, 53, 47, 66, 10, 63, 64, 55, 50, 49, 57, 36, 46, 15]

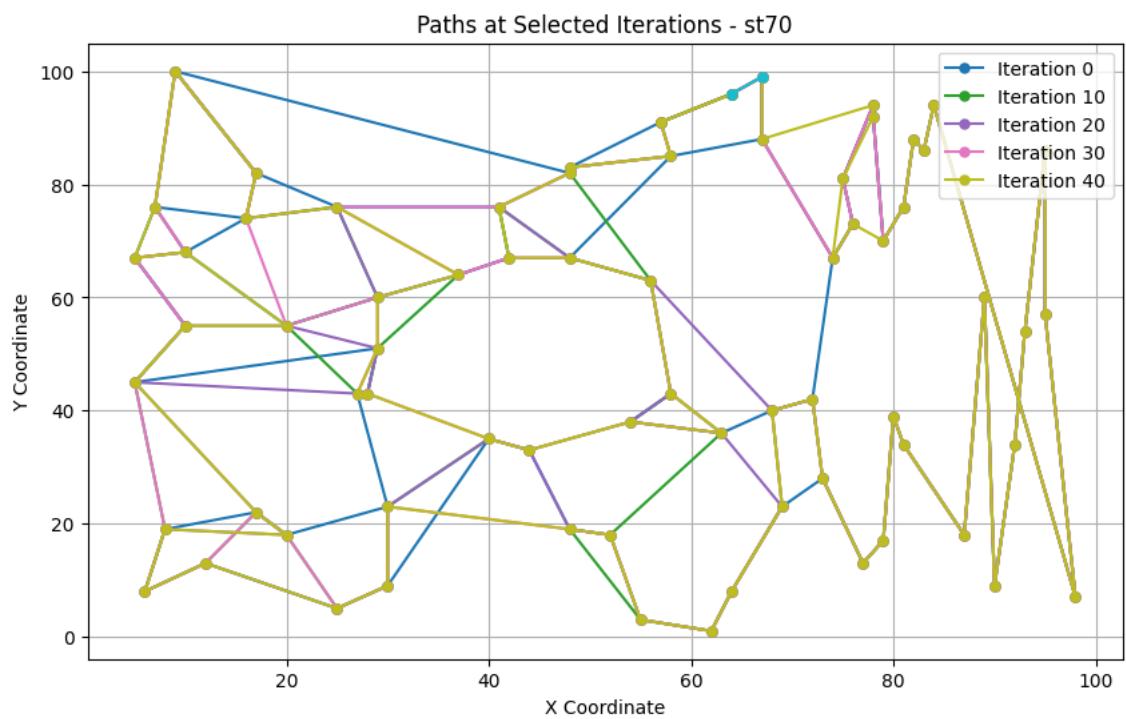
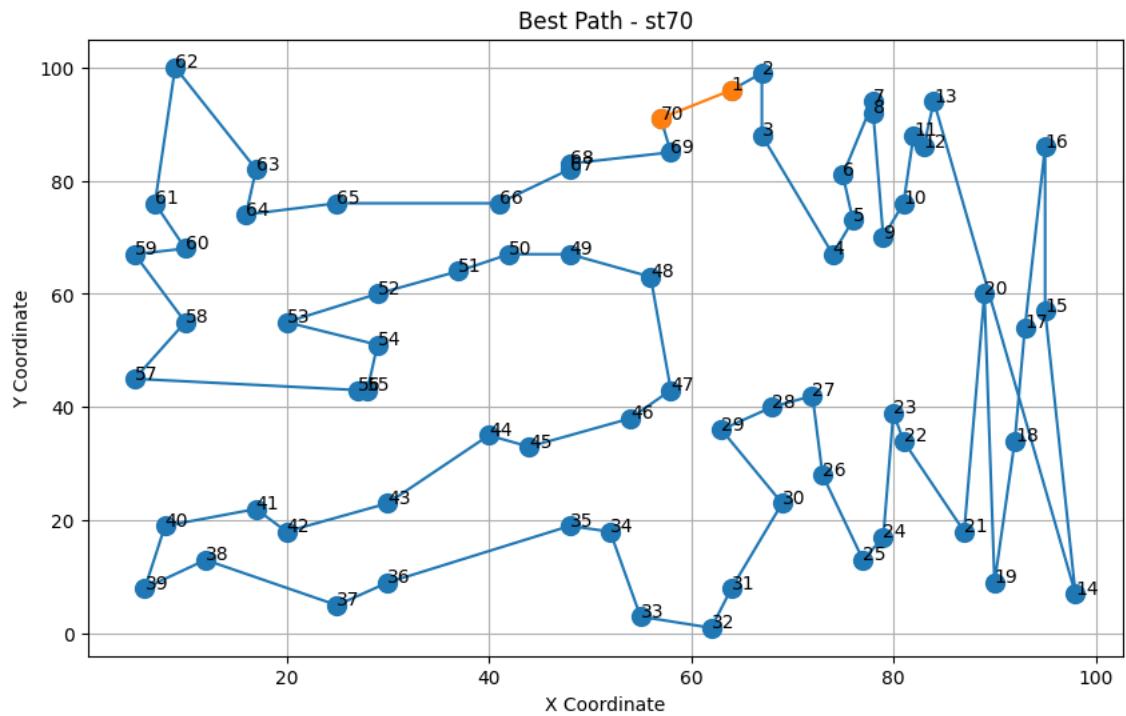
Total Computation Time: 184.99938917160034 seconds

Average Computation Time per Iteration: 0.09852262496948243 seconds

Memory Usage: 39200 bytes

Best Fitness over Iterations - st70



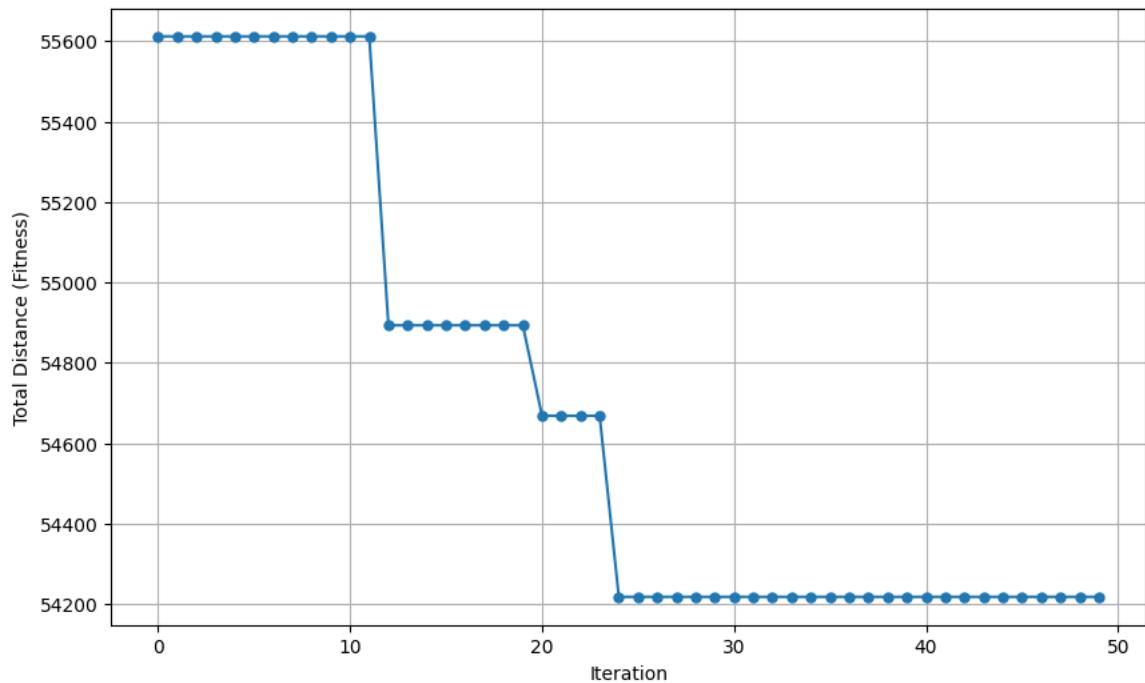


```

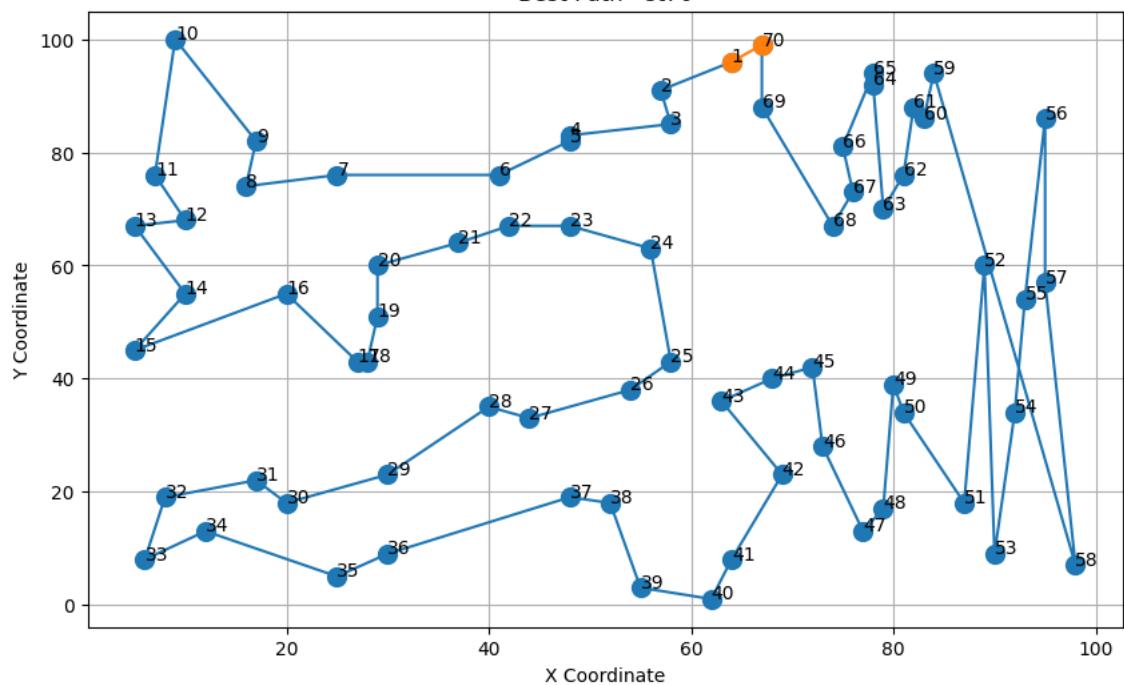
Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=1,
epsilon=1e-10
Loaded coordinates for 70 cities from st70.
Best Fitness: 54217.797683201454
Best Path: [0, 15, 46, 36, 57, 49, 50, 55, 64, 63, 10, 66, 47, 53, 61, 32,
33, 20, 11, 59, 51, 9, 4, 52, 5, 40, 42, 16, 8, 39, 60, 38, 24, 44, 45, 26,
67, 43, 29, 19, 13, 2, 41, 17, 3, 31, 27, 7, 1, 6, 25, 56, 48, 18, 23, 34,
14, 54, 69, 68, 30, 58, 62, 12, 28, 37, 21, 65, 22, 35]
Total Computation Time: 189.72098088264465 seconds
Average Computation Time per Iteration: 0.0995546817779541 seconds
Memory Usage: 39200 bytes

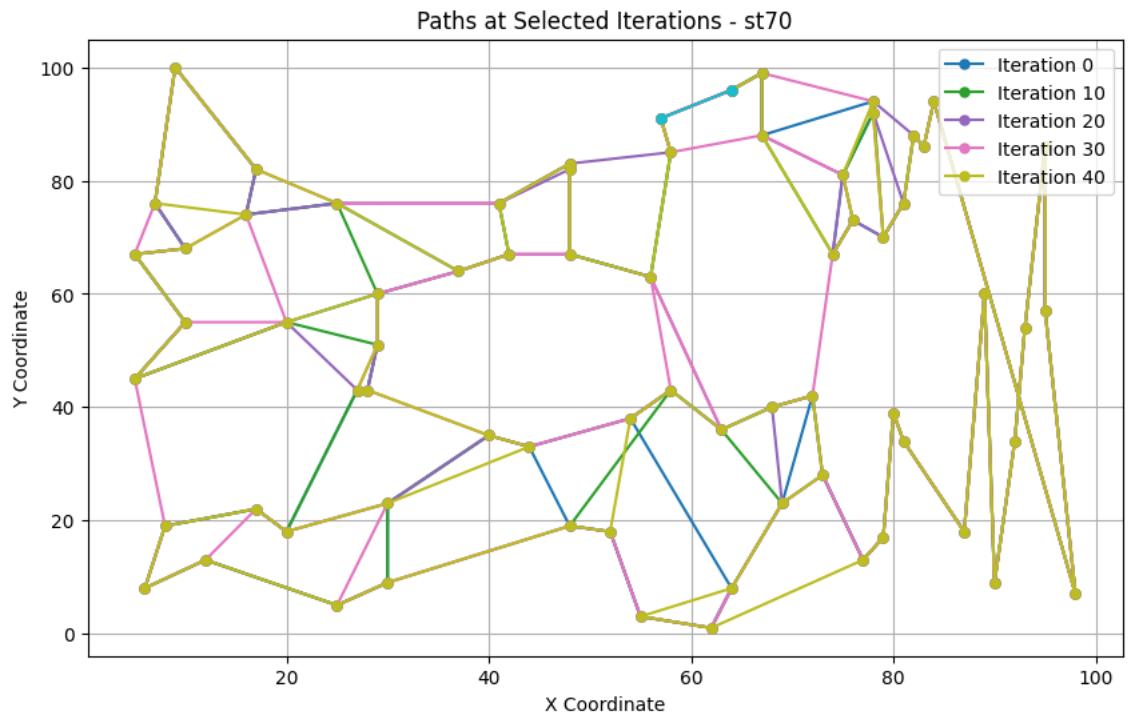
```

Best Fitness over Iterations - st70



Best Path - st70





```
Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 70 cities from st70.
```

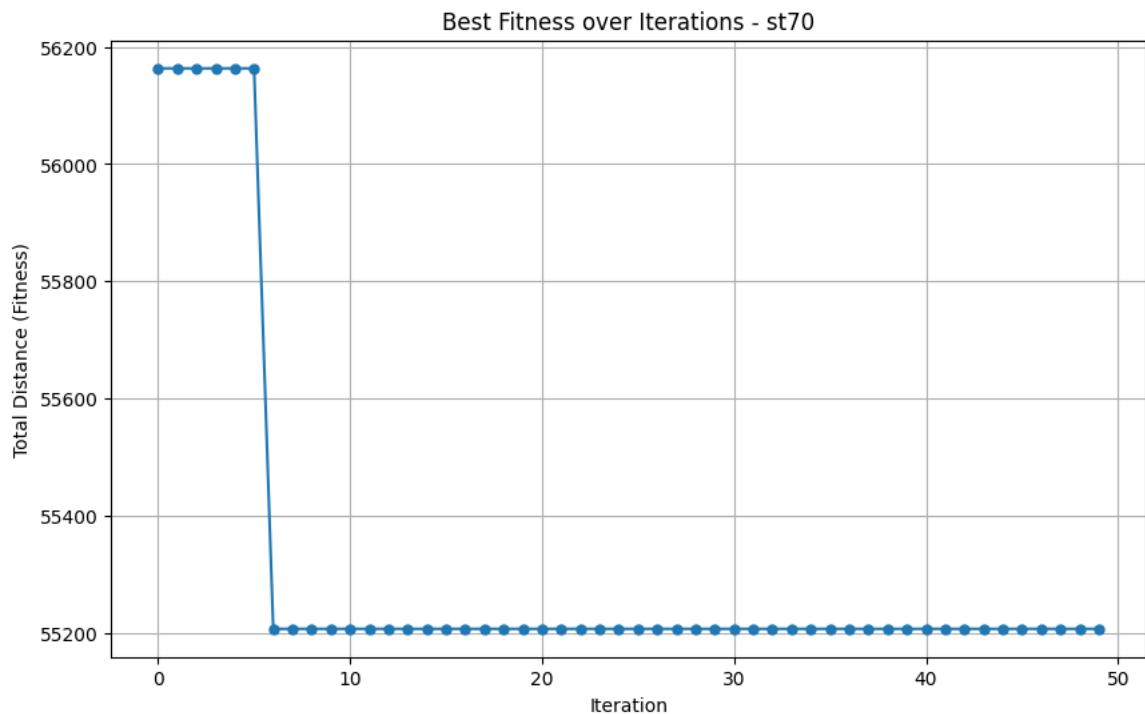
```
Best Fitness: 55207.46041252697
```

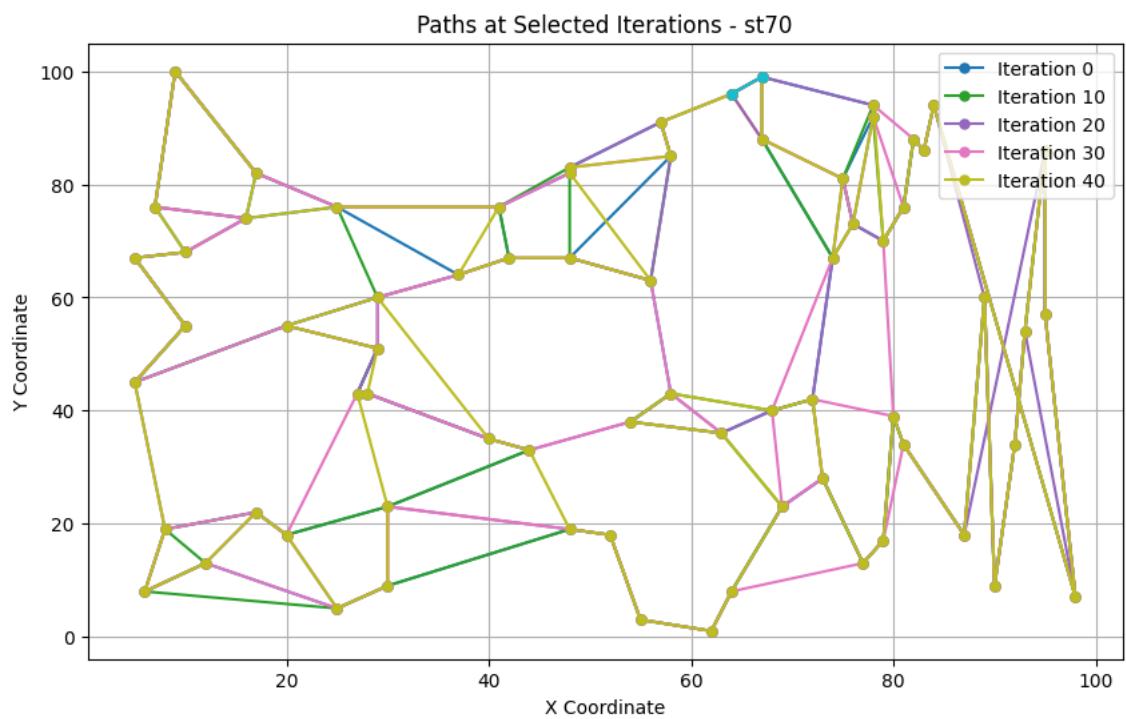
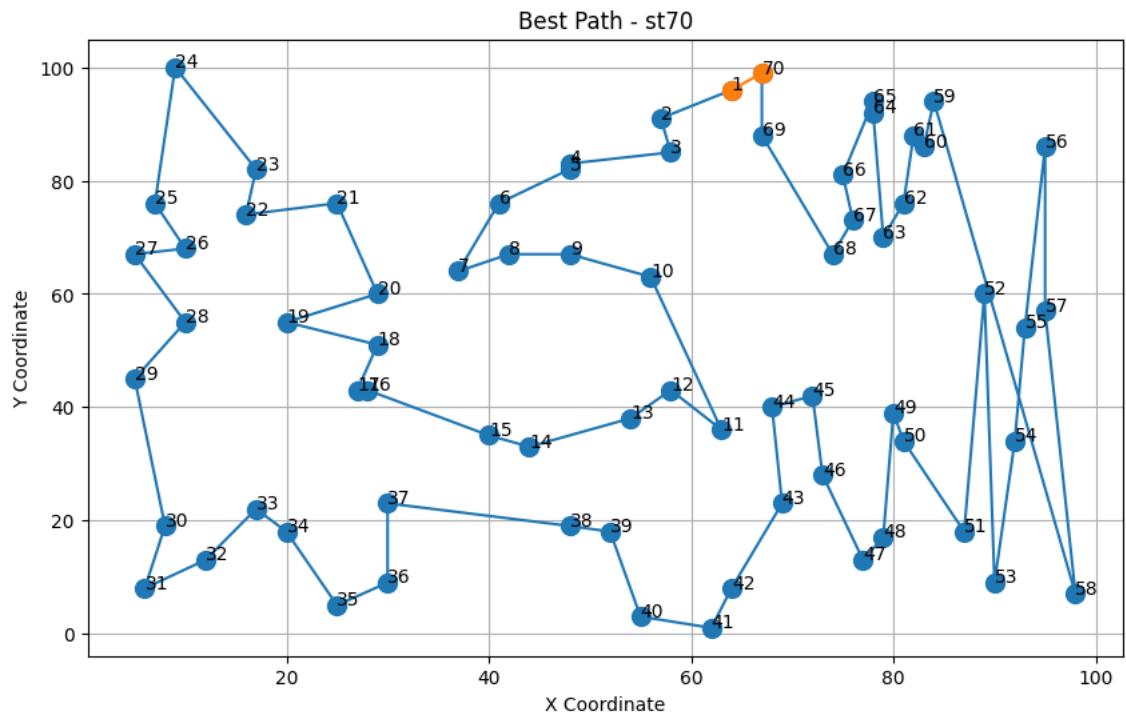
```
Best Path: [0, 15, 46, 36, 57, 49, 51, 9, 4, 52, 41, 5, 40, 42, 16, 20, 33,
11, 32, 59, 50, 55, 64, 63, 10, 66, 47, 53, 61, 38, 24, 44, 60, 39, 45, 26,
8, 67, 43, 29, 19, 13, 2, 17, 3, 31, 27, 7, 1, 6, 25, 56, 48, 18, 23, 34,
14, 54, 69, 68, 30, 58, 62, 12, 28, 37, 21, 65, 22, 35]
```

```
Total Computation Time: 183.03492140769958 seconds
```

```
Average Computation Time per Iteration: 0.09705416679382324 seconds
```

```
Memory Usage: 39200 bytes
```





Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=3, epsilon=1e-10

Loaded coordinates for 70 cities from st70.

Best Fitness: 55230.706639354685

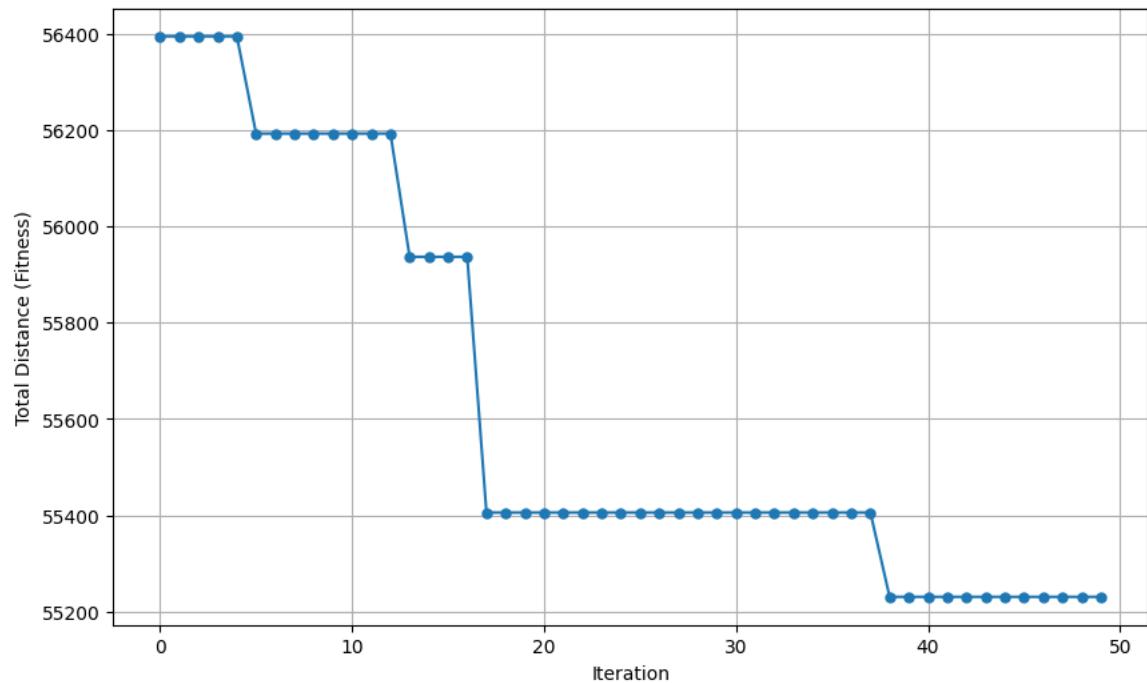
Best Path: [0, 35, 22, 65, 21, 37, 12, 28, 62, 58, 30, 68, 69, 54, 14, 34, 23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 3, 17, 41, 2, 13, 19, 29, 43, 67, 26, 45, 44, 24, 38, 60, 39, 8, 33, 20, 16, 42, 40, 5, 52, 4, 9, 51, 59, 11, 32, 61, 53, 47, 66, 55, 10, 63, 64, 50, 49, 57, 36, 46, 15]

Total Computation Time: 169.01749324798584 seconds

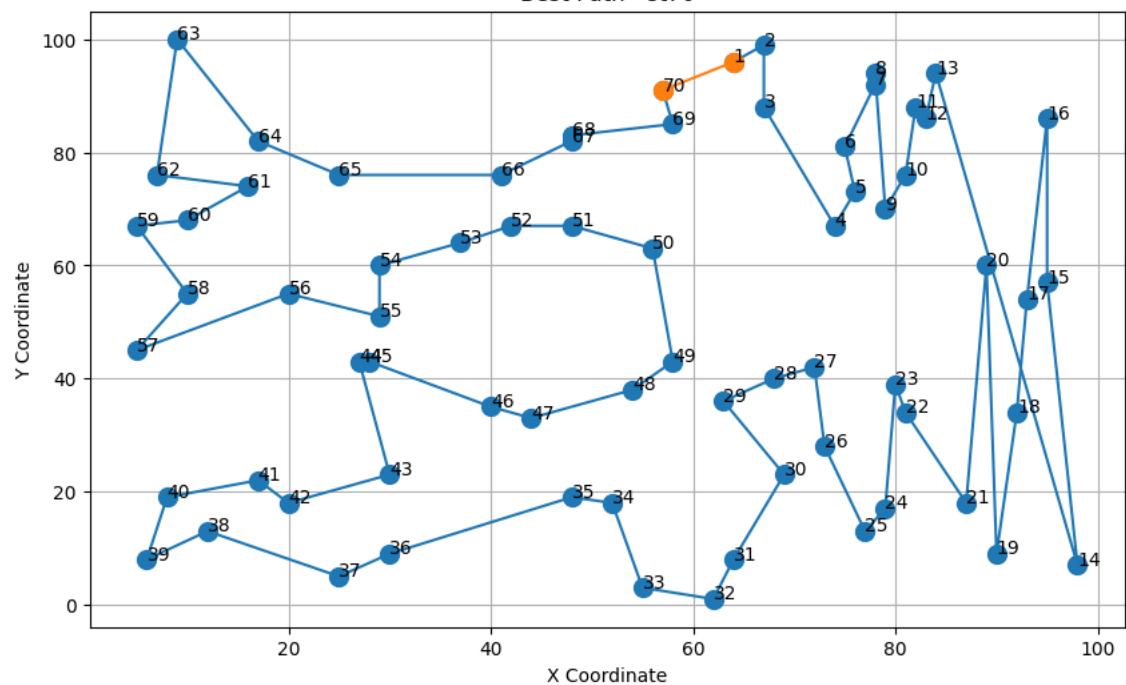
Average Computation Time per Iteration: 0.09899030685424805 seconds

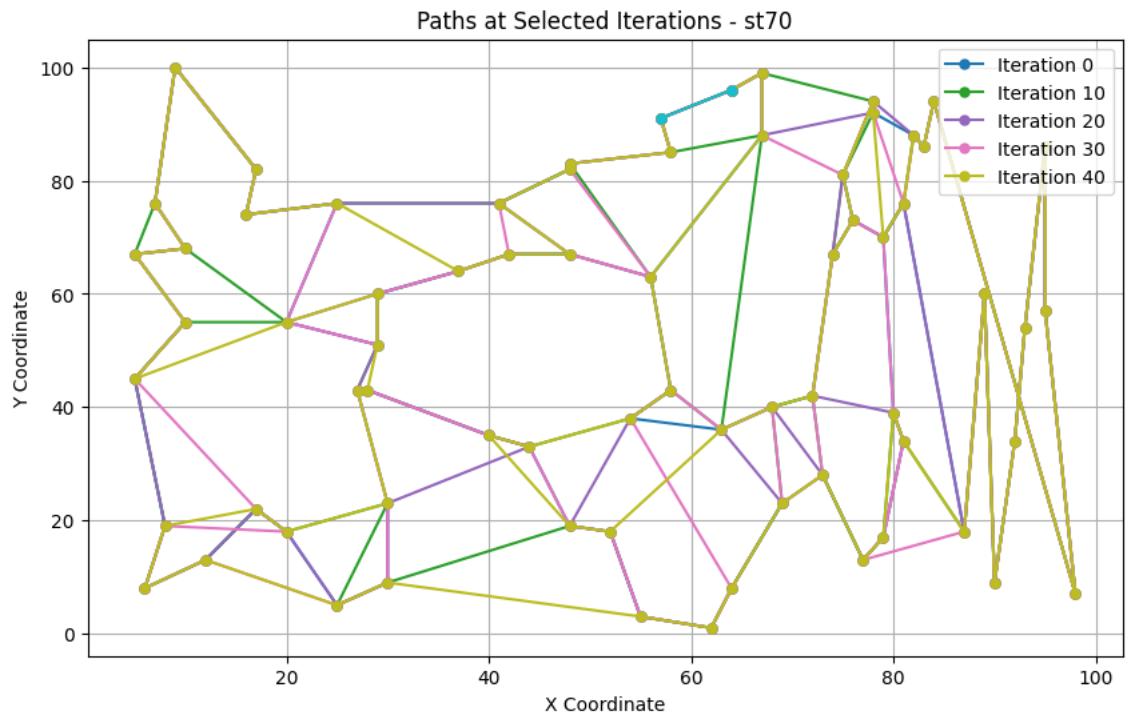
Memory Usage: 39200 bytes

Best Fitness over Iterations - st70



Best Path - st70





```
Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=4,
epsilon=1e-10
```

```
Loaded coordinates for 70 cities from st70.
```

```
Best Fitness: 54977.5336540439
```

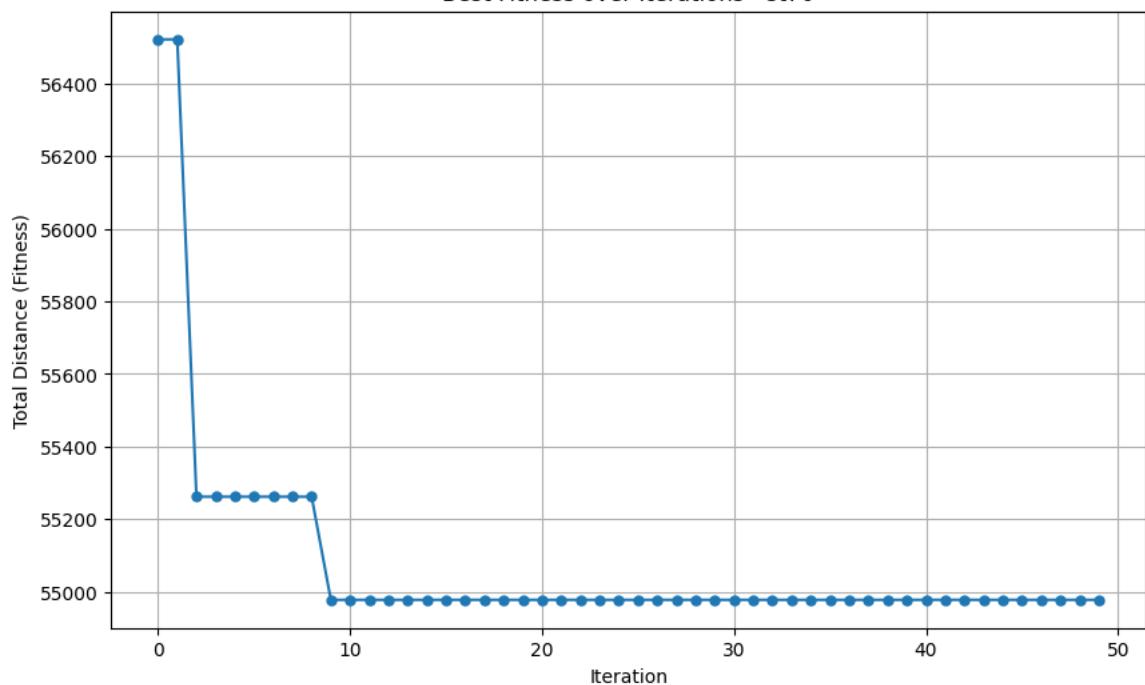
```
Best Path: [0, 35, 22, 65, 21, 37, 28, 12, 62, 58, 30, 68, 69, 54, 14, 34, 23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 3, 17, 41, 2, 13, 19, 29, 43, 67, 16, 42, 40, 5, 52, 4, 9, 51, 59, 11, 20, 33, 8, 26, 45, 39, 60, 44, 24, 38, 61, 53, 32, 66, 47, 10, 63, 64, 55, 50, 49, 57, 36, 46, 15]
```

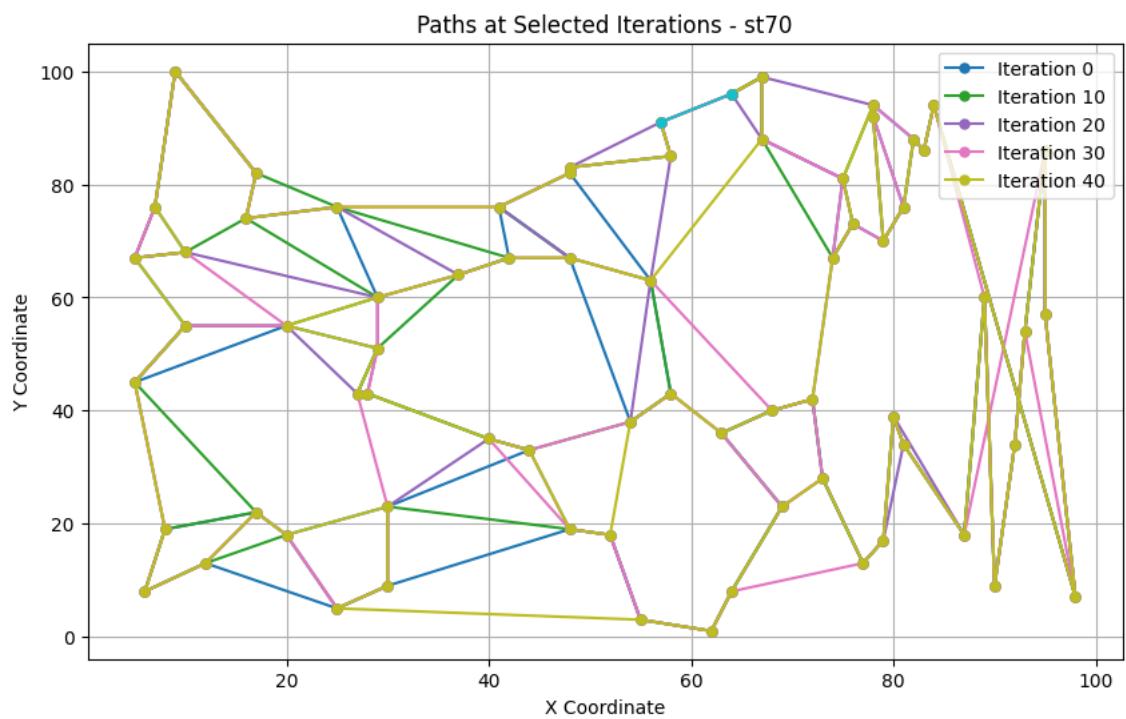
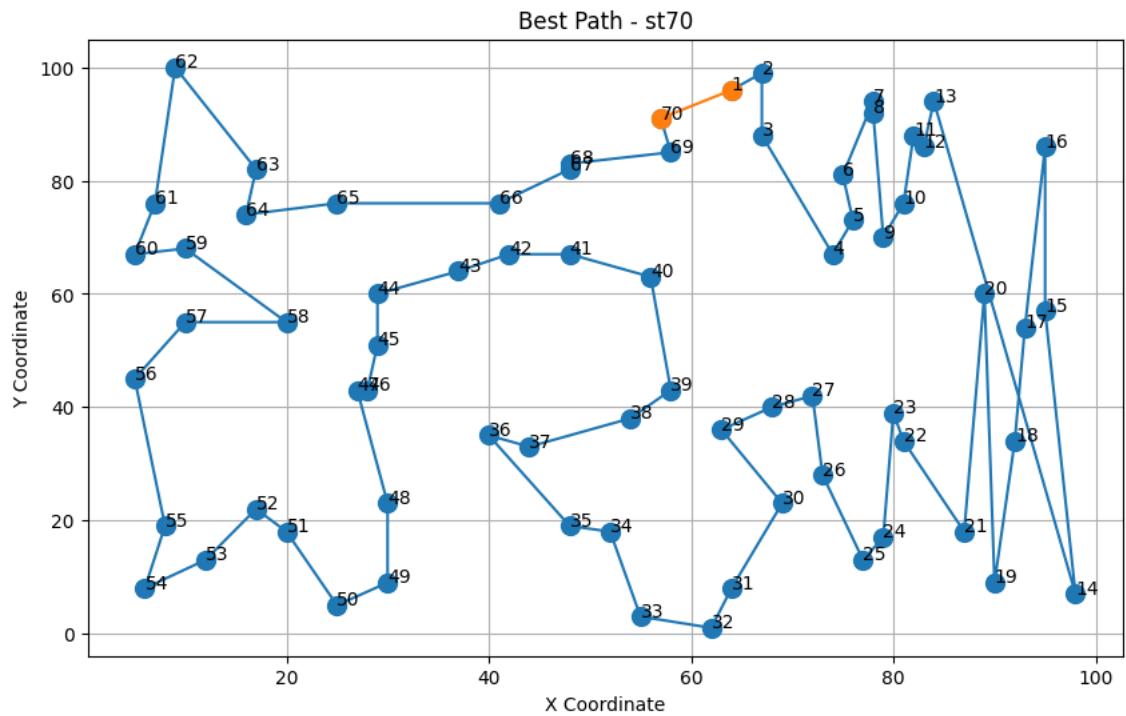
```
Total Computation Time: 181.53871512413025 seconds
```

```
Average Computation Time per Iteration: 0.0955450963973999 seconds
```

```
Memory Usage: 39200 bytes
```

Best Fitness over Iterations - st70





```
Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 70 cities from st70.
```

```
Best Fitness: 54592.9741509476
```

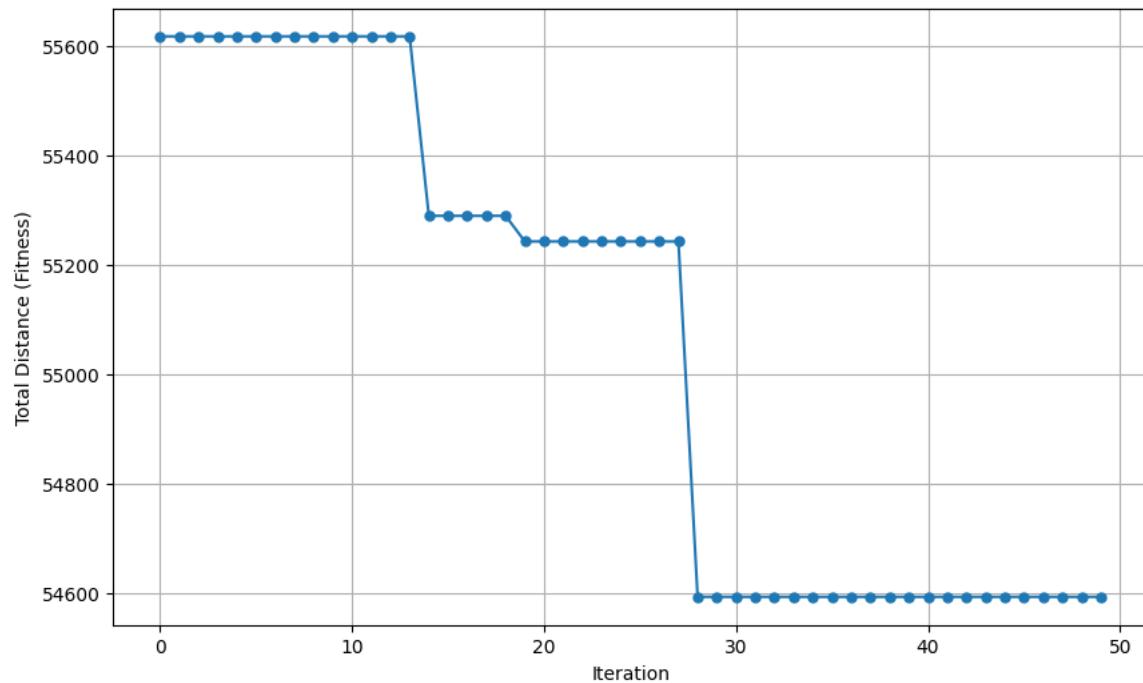
```
Best Path: [0, 35, 22, 65, 21, 37, 12, 28, 62, 58, 30, 68, 69, 54, 14, 34,
23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 3, 17, 2, 13, 19, 29, 43, 67, 26, 45,
44, 24, 38, 60, 39, 8, 16, 42, 40, 41, 5, 52, 4, 9, 51, 59, 11, 20, 33, 32,
61, 53, 47, 66, 10, 63, 64, 55, 50, 49, 57, 36, 46, 15]
```

```
Total Computation Time: 185.05664777755737 seconds
```

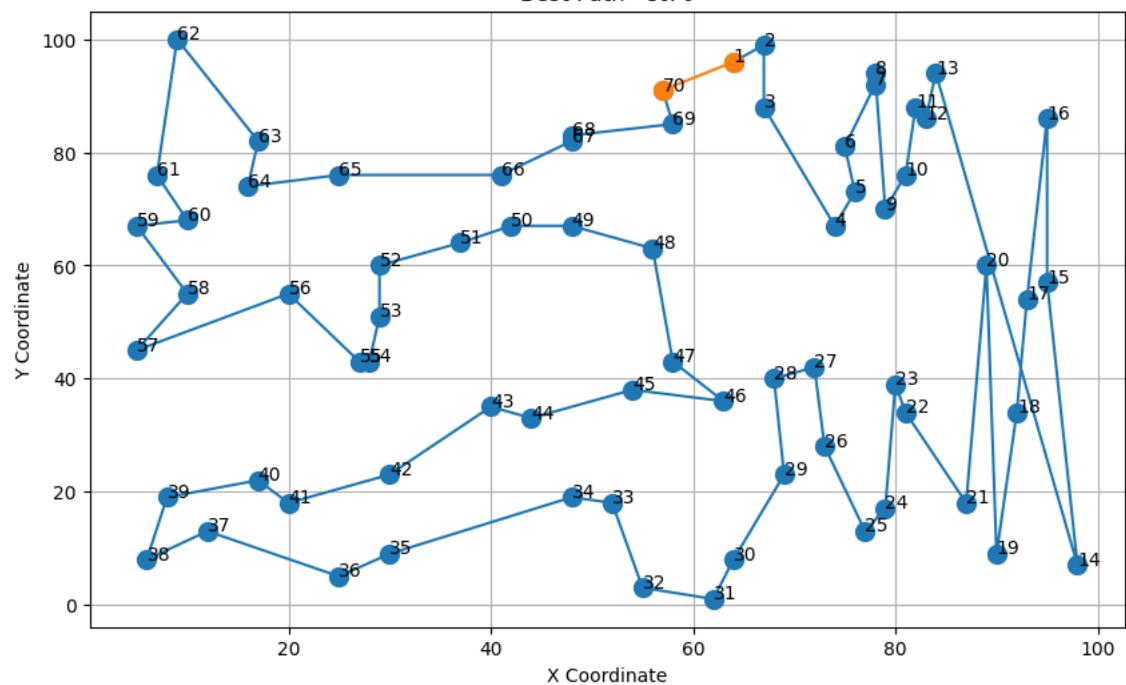
```
Average Computation Time per Iteration: 0.10092648029327393 seconds
```

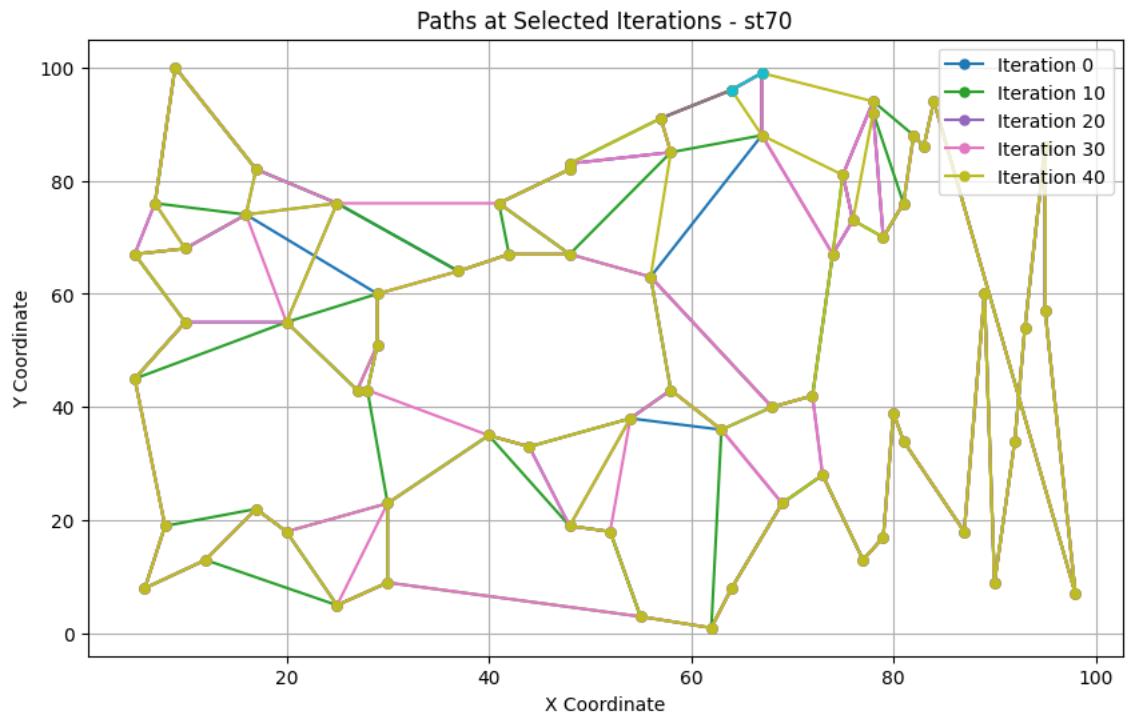
```
Memory Usage: 39200 bytes
```

Best Fitness over Iterations - st70



Best Path - st70





Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=2, epsilon=1e-08

Loaded coordinates for 70 cities from st70.

Best Fitness: 55075.23144661781

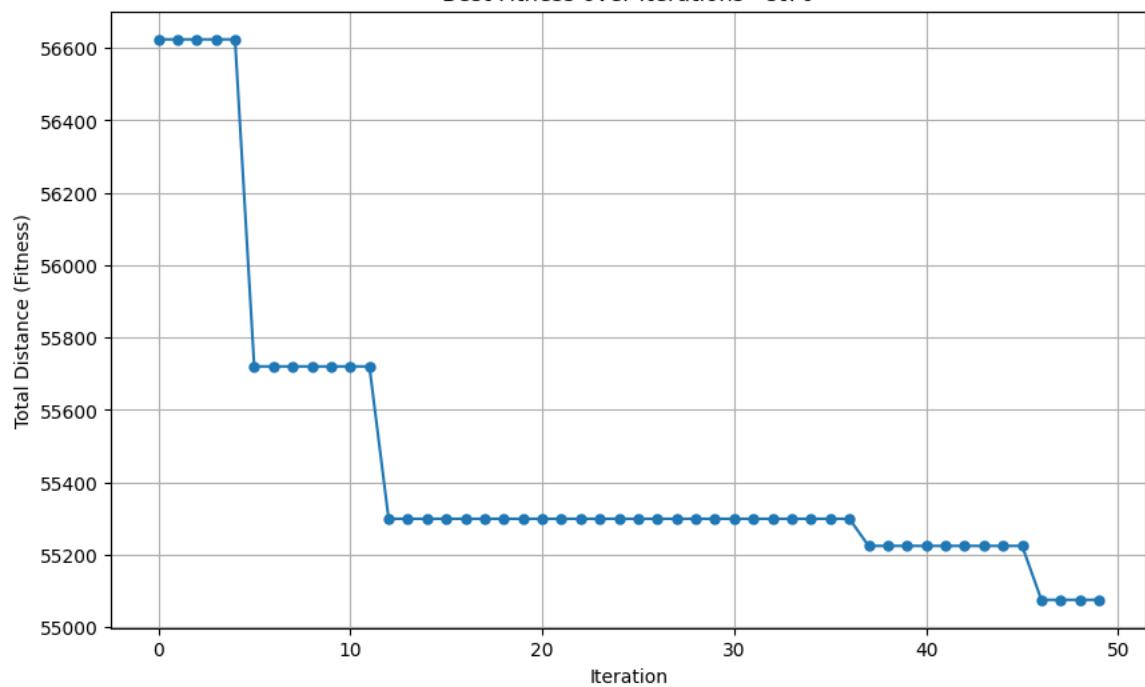
Best Path: [0, 35, 22, 28, 12, 37, 65, 21, 62, 58, 30, 68, 69, 54, 14, 34, 23, 18, 48, 56, 25, 6, 1, 7, 27, 31, 3, 17, 41, 2, 13, 19, 29, 43, 67, 26, 45, 39, 44, 24, 38, 60, 8, 16, 42, 40, 5, 52, 4, 9, 51, 59, 11, 20, 33, 32, 61, 53, 47, 66, 55, 10, 63, 64, 50, 49, 57, 36, 46, 15]

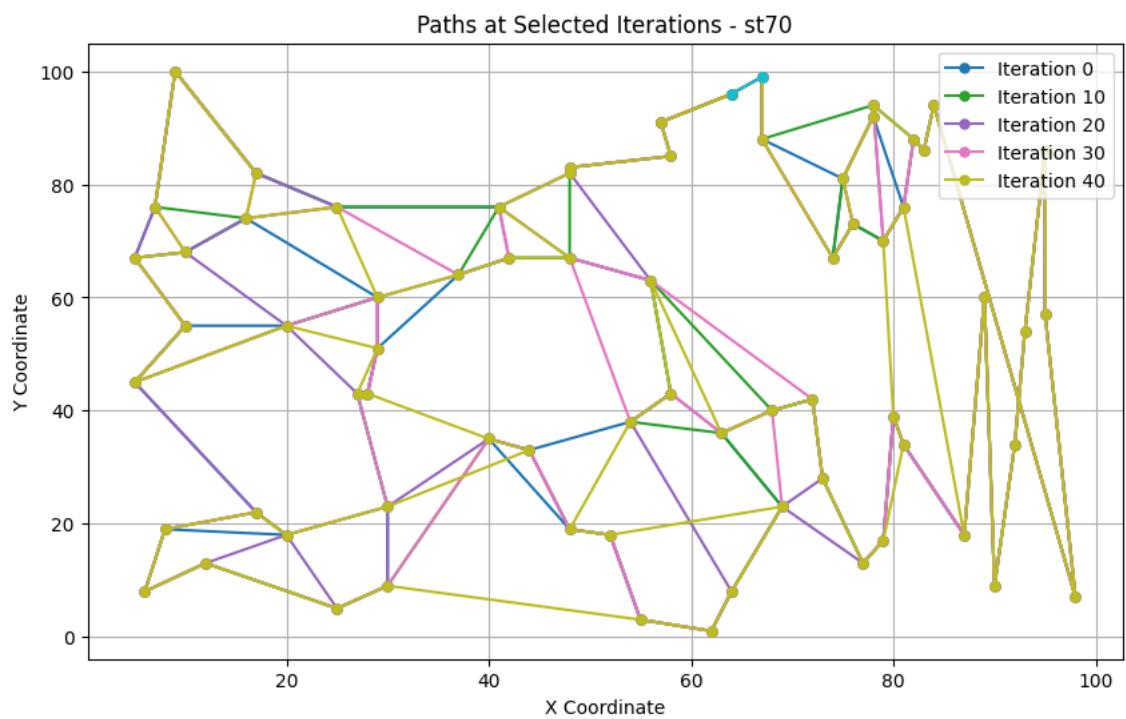
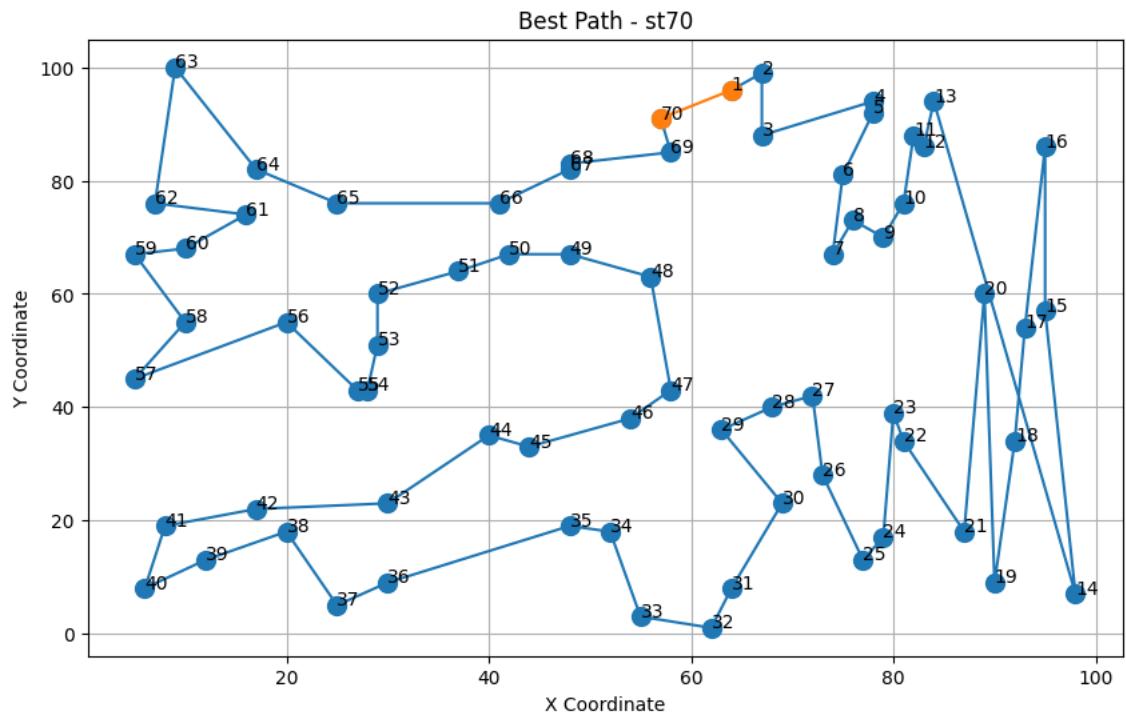
Total Computation Time: 203.08028650283813 seconds

Average Computation Time per Iteration: 0.09651600837707519 seconds

Memory Usage: 39200 bytes

Best Fitness over Iterations - st70





```
Running simulation with dataset=st70, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-06
```

```
Loaded coordinates for 70 cities from st70.
```

```
Best Fitness: 54627.187355163434
```

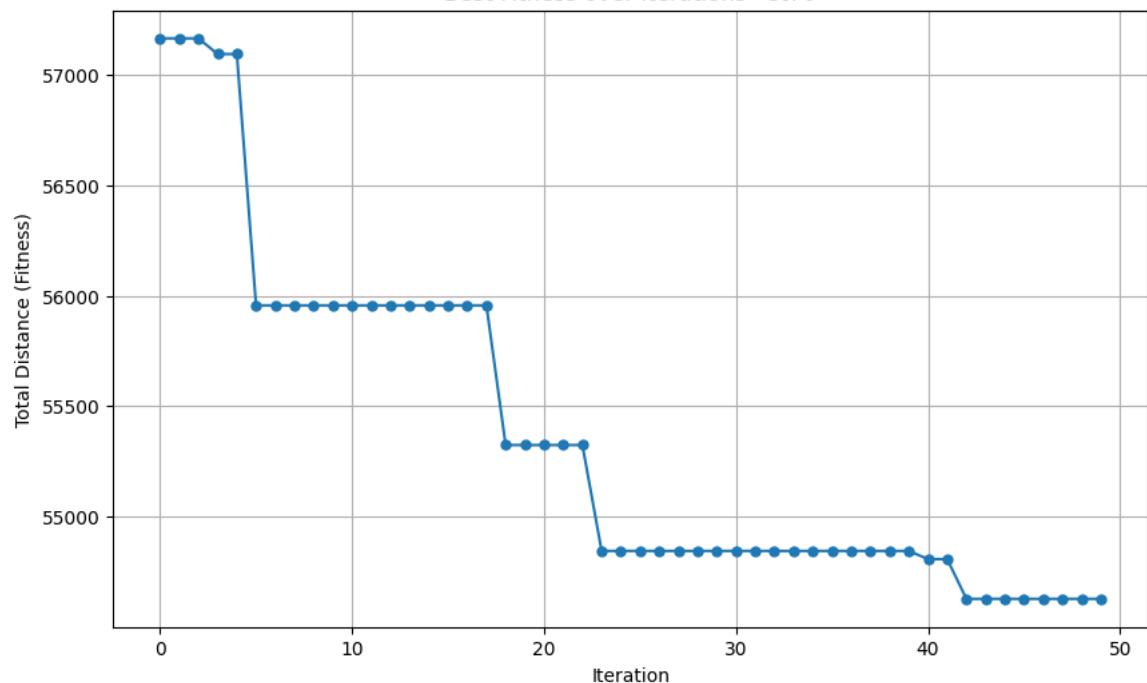
```
Best Path: [0, 15, 46, 36, 57, 49, 50, 55, 64, 63, 10, 66, 47, 53, 61, 32,
33, 20, 11, 59, 51, 9, 4, 52, 5, 40, 42, 16, 8, 39, 60, 38, 24, 44, 45, 26,
67, 43, 29, 19, 13, 41, 17, 3, 2, 31, 27, 7, 1, 6, 25, 56, 48, 18, 23, 34,
14, 54, 69, 68, 30, 58, 62, 12, 28, 37, 21, 65, 22, 35]
```

```
Total Computation Time: 181.4082977771759 seconds
```

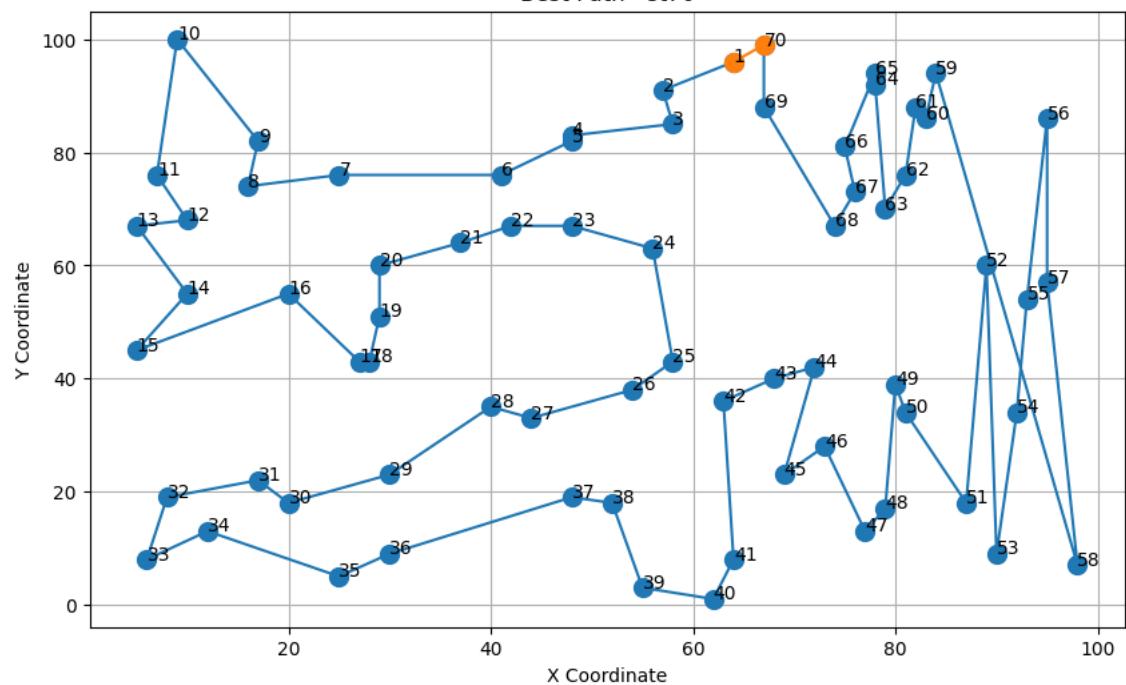
```
Average Computation Time per Iteration: 0.099832181930542 seconds
```

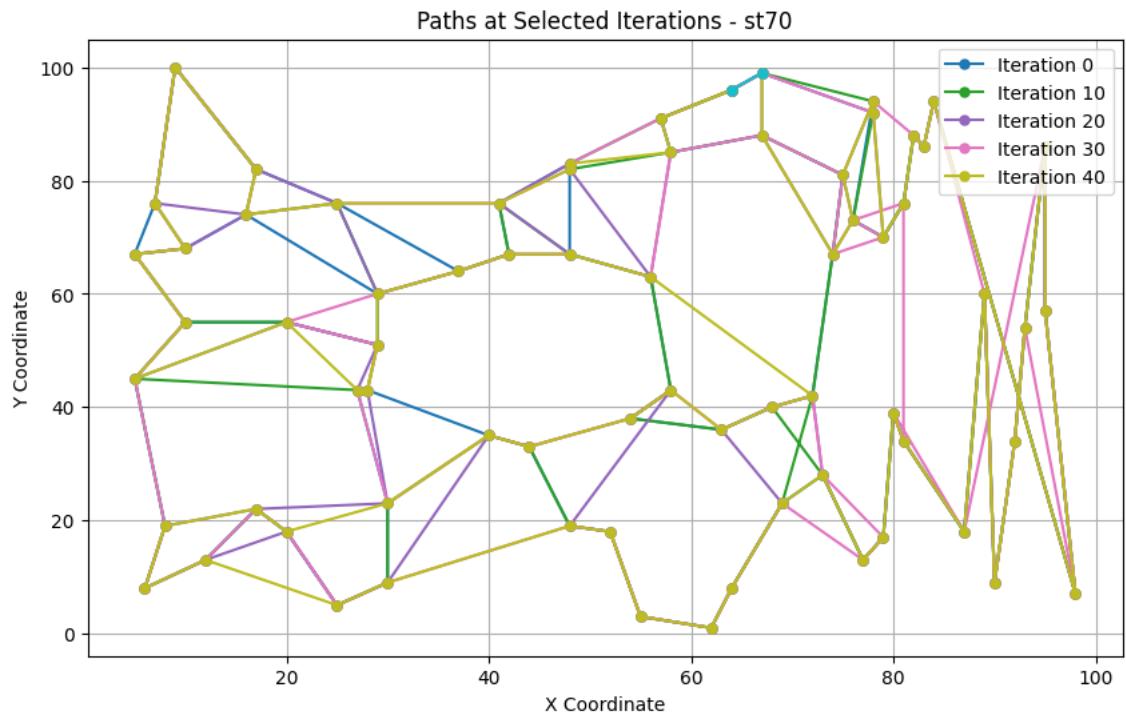
```
Memory Usage: 39200 bytes
```

Best Fitness over Iterations - st70



Best Path - st70





```
Running simulation with dataset=ulysses22, decay_rate=0.001, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

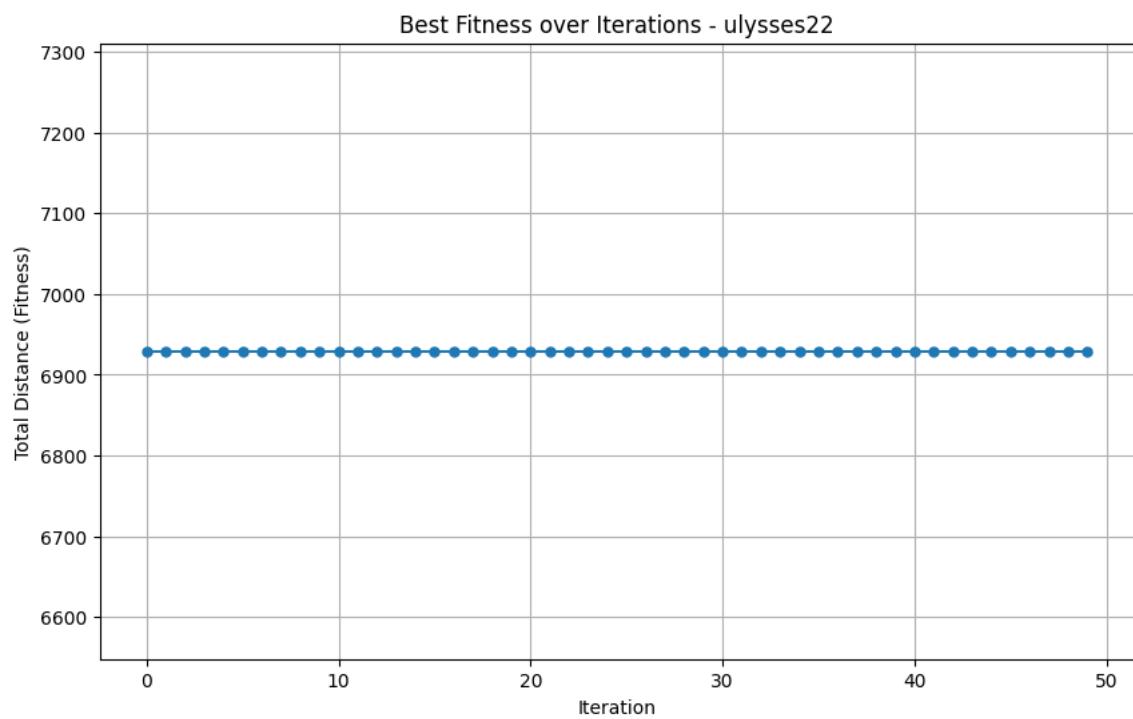
```
Best Fitness: 6929.232428647036
```

```
Best Path: [0, 13, 12, 11, 6, 5, 14, 4, 10, 8, 9, 18, 19, 20, 15, 2, 1, 16,
3, 17, 21, 7]
```

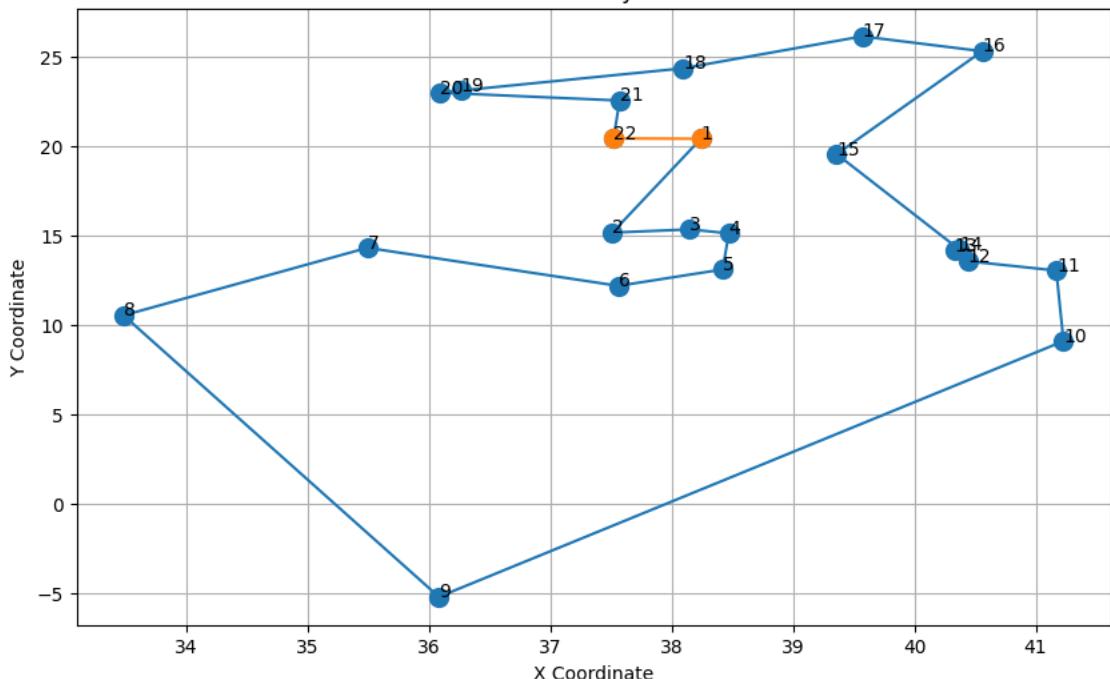
```
Total Computation Time: 29.227307081222534 seconds
```

```
Average Computation Time per Iteration: 0.010310120582580566 seconds
```

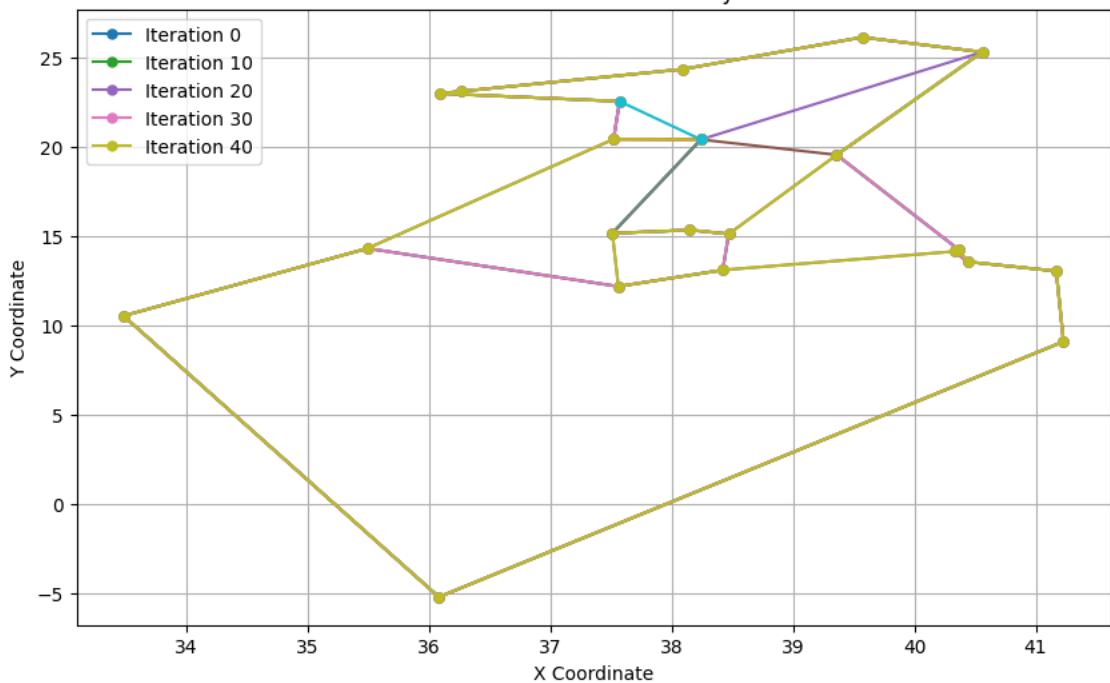
```
Memory Usage: 3872 bytes
```



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

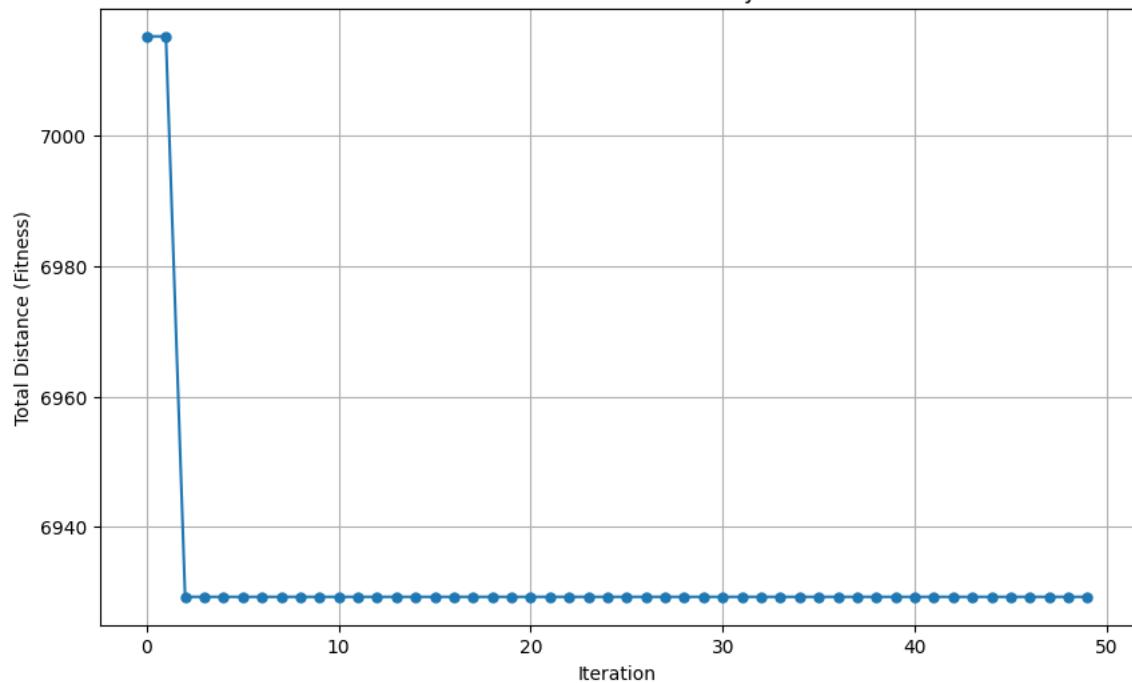
```
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5, 6, 11, 12, 13]
```

```
Total Computation Time: 26.889490127563477 seconds
```

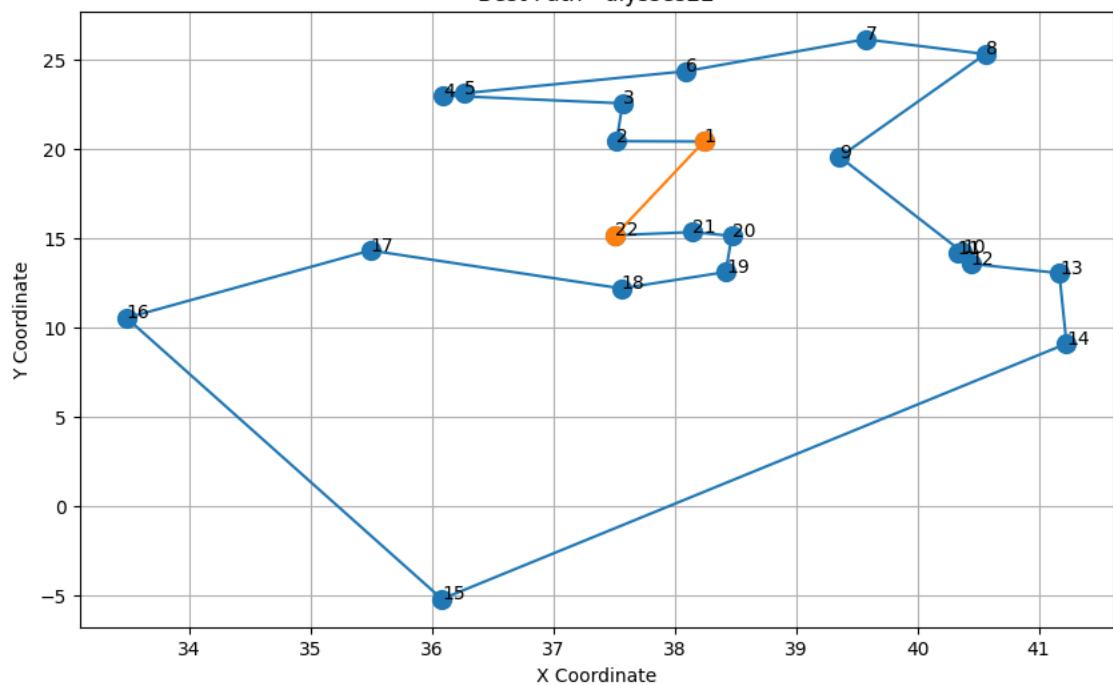
```
Average Computation Time per Iteration: 0.01078601837158203 seconds
```

```
Memory Usage: 3872 bytes
```

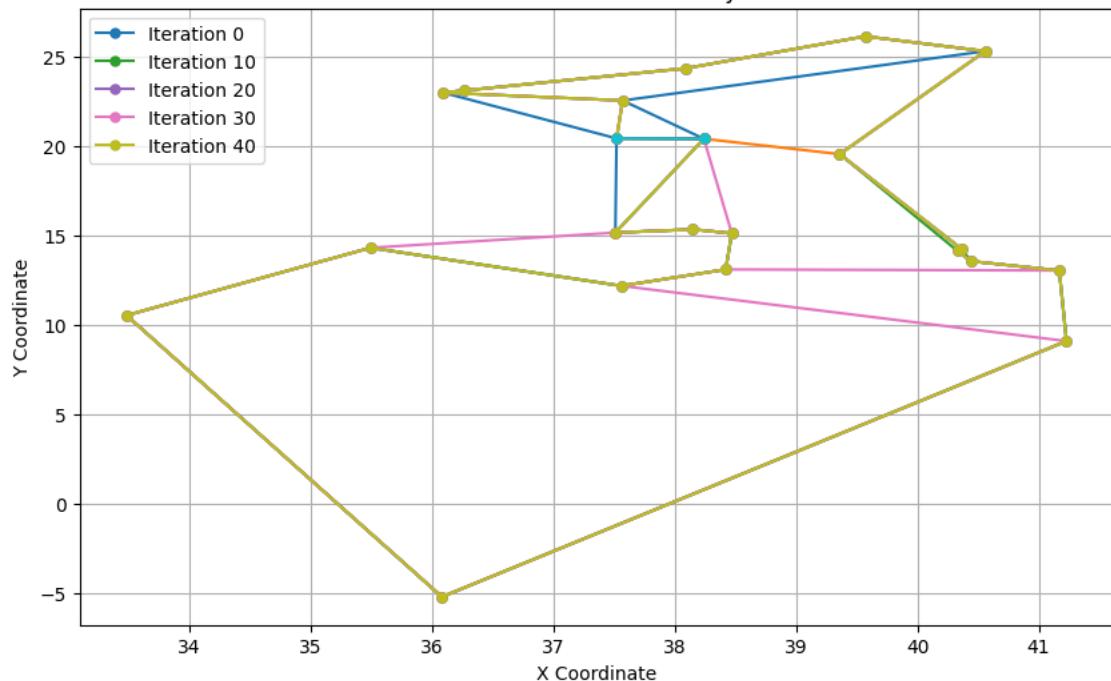
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



Running simulation with dataset=ulysses22, decay_rate=0.1, k=0.1, m=2, epsilon=1e-10

Loaded coordinates for 22 cities from ulysses22.

Best Fitness: 6929.232428647036

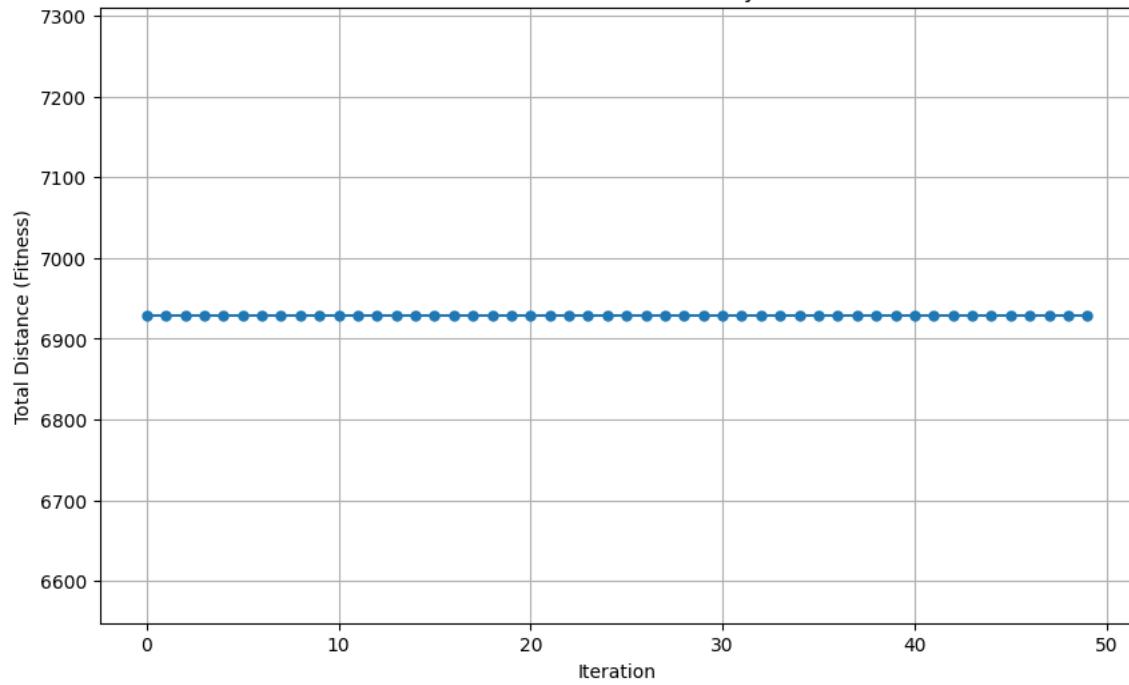
Best Path: [0, 13, 12, 11, 6, 5, 14, 4, 10, 8, 9, 18, 19, 20, 15, 2, 1, 16, 3, 17, 21, 7]

Total Computation Time: 30.618096590042114 seconds

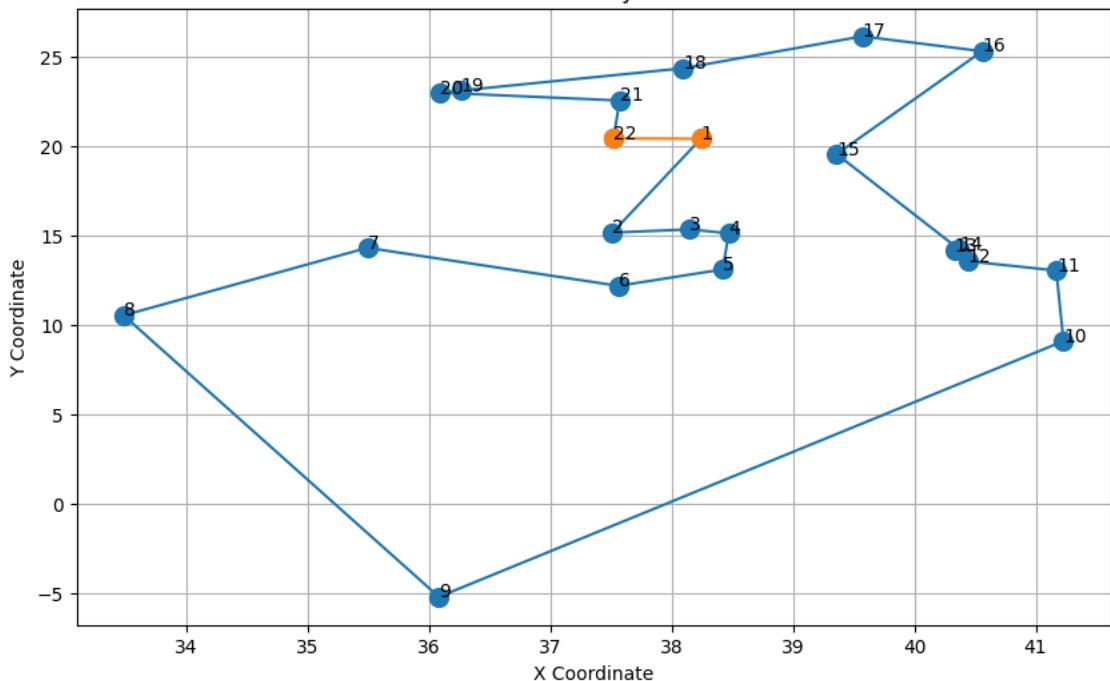
Average Computation Time per Iteration: 0.011891427040100098 seconds

Memory Usage: 3872 bytes

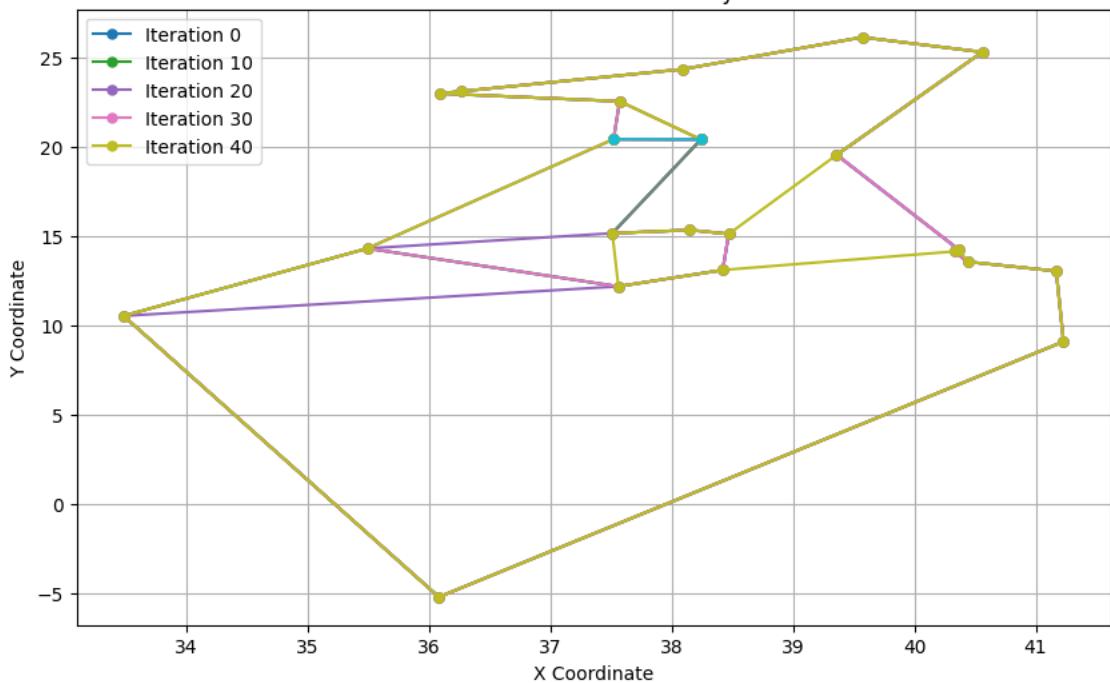
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



Running simulation with dataset=ulysses22, decay_rate=0.002066115702479339, k=0.1, m=2, epsilon=1e-10

Loaded coordinates for 22 cities from ulysses22.

Best Fitness: 6929.232428647036

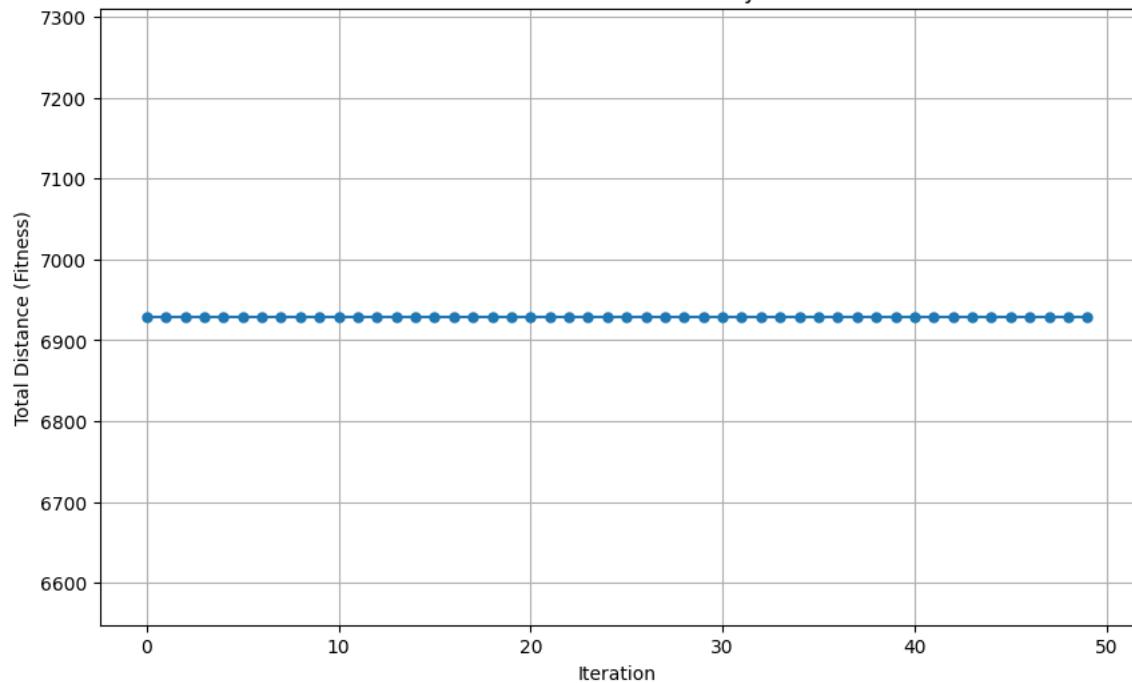
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5, 6, 11, 12, 13]

Total Computation Time: 28.27671456336975 seconds

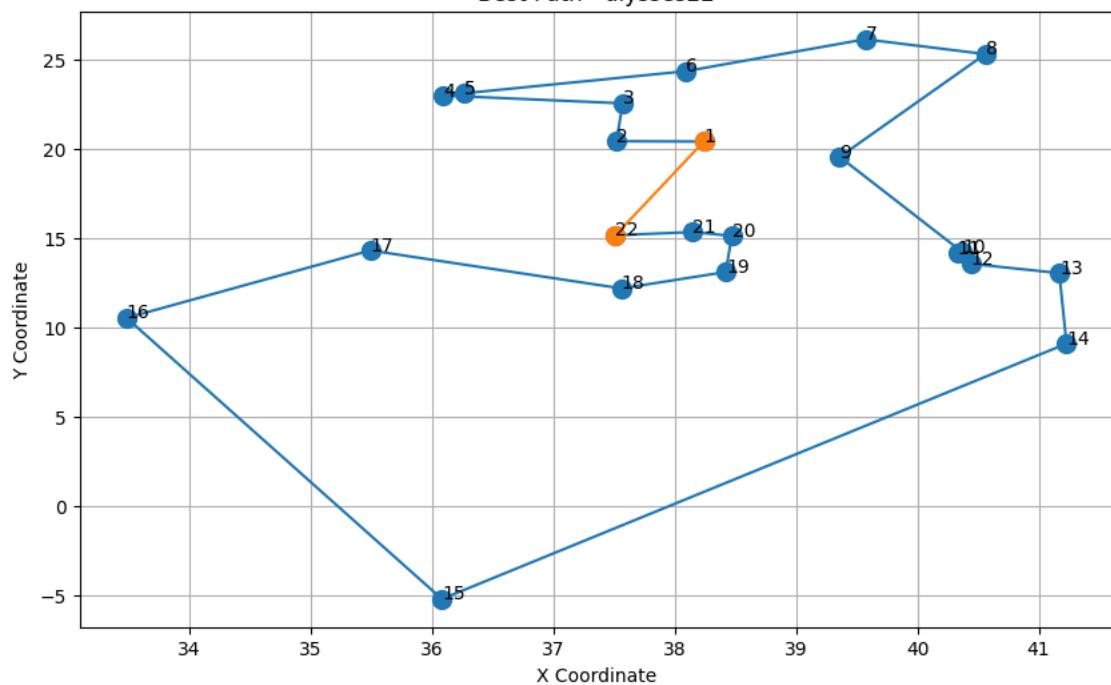
Average Computation Time per Iteration: 0.01065955638885498 seconds

Memory Usage: 3872 bytes

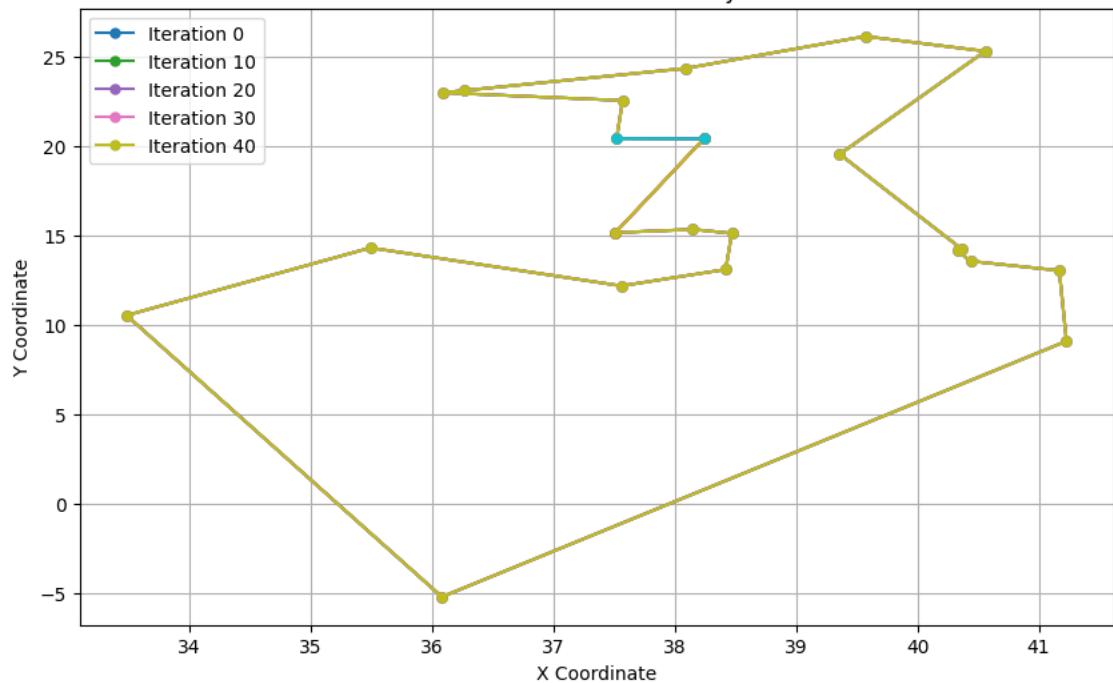
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.01, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

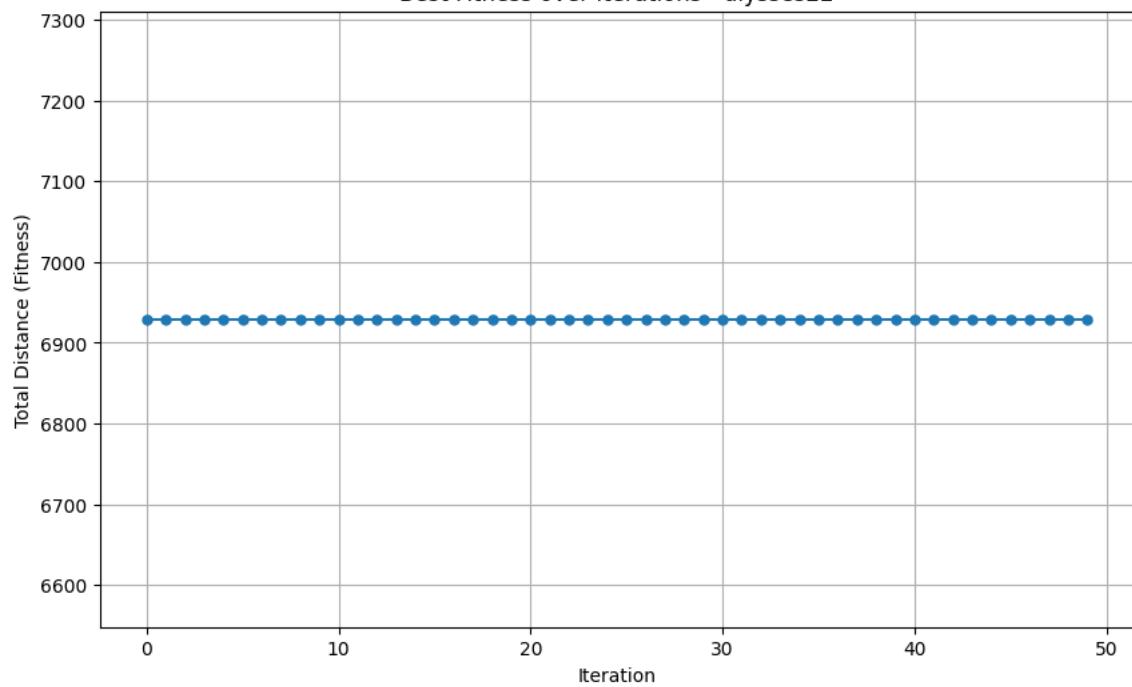
```
Best Path: [0, 13, 12, 11, 6, 5, 14, 4, 10, 8, 9, 18, 19, 20, 15, 2, 1, 16,
3, 17, 21, 7]
```

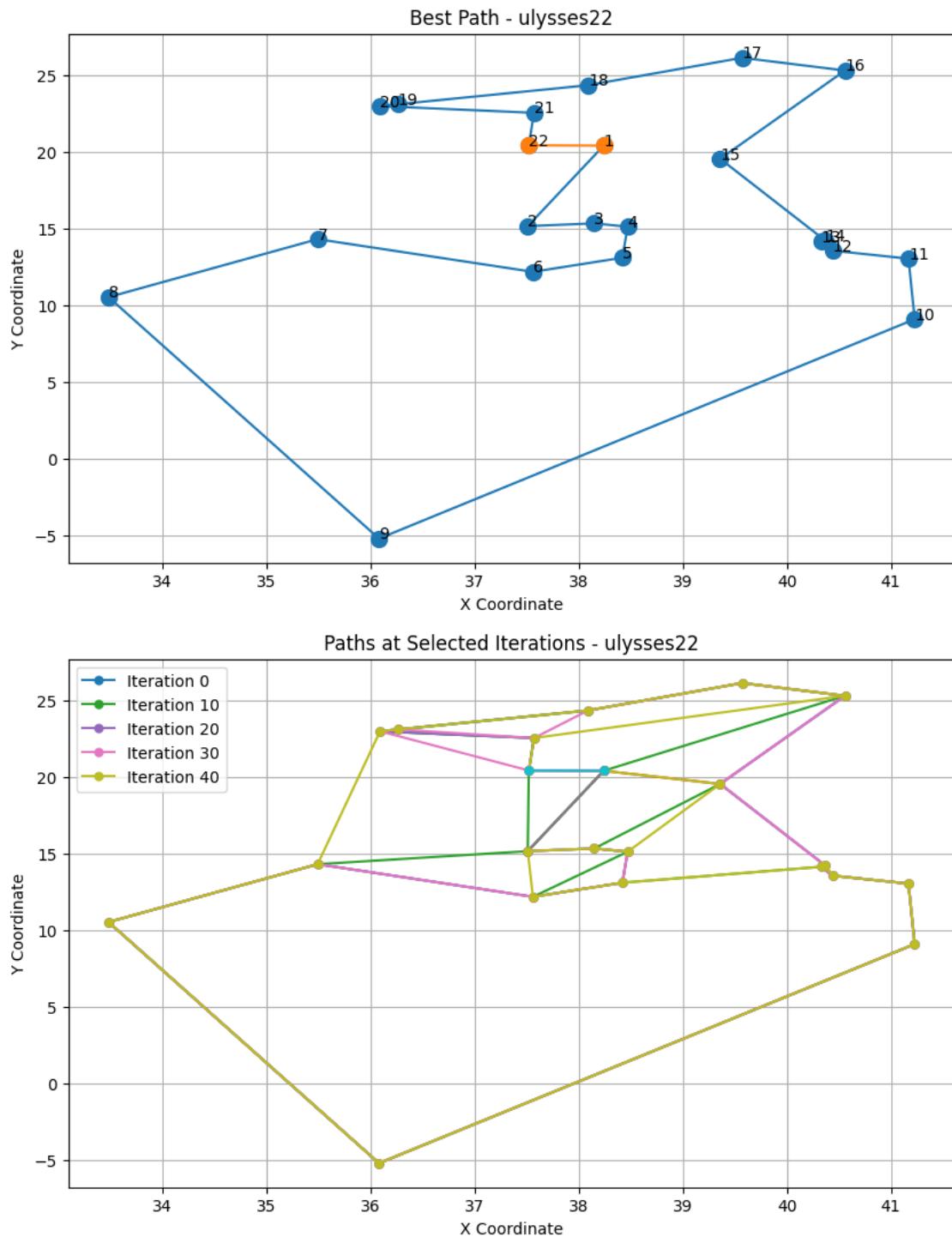
```
Total Computation Time: 27.688708066940308 seconds
```

```
Average Computation Time per Iteration: 0.009800176620483398 seconds
```

```
Memory Usage: 3872 bytes
```

Best Fitness over Iterations - ulysses22





```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.05, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

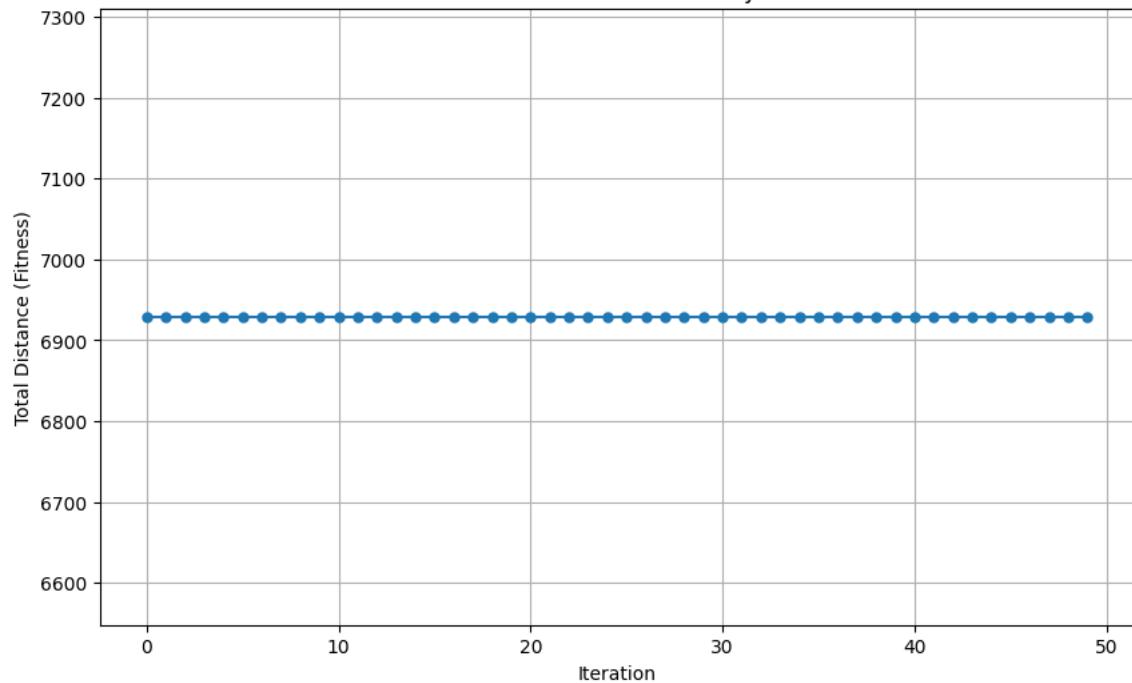
```
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5,
6, 11, 12, 13]
```

```
Total Computation Time: 25.919324159622192 seconds
```

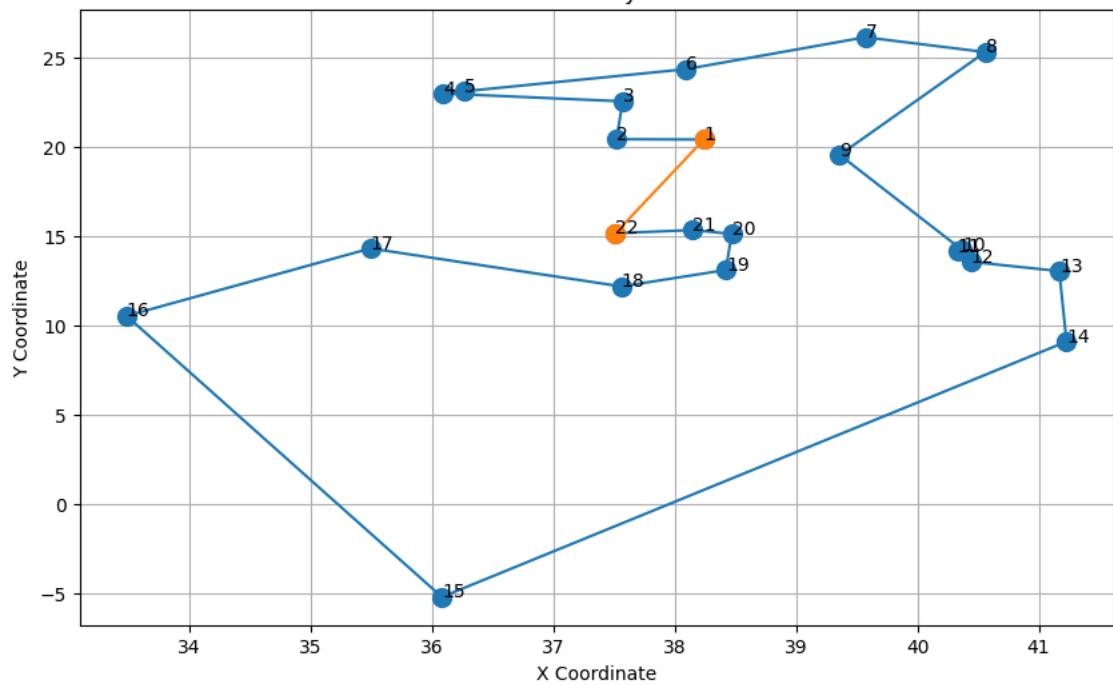
```
Average Computation Time per Iteration: 0.009848074913024902 seconds
```

```
Memory Usage: 3872 bytes
```

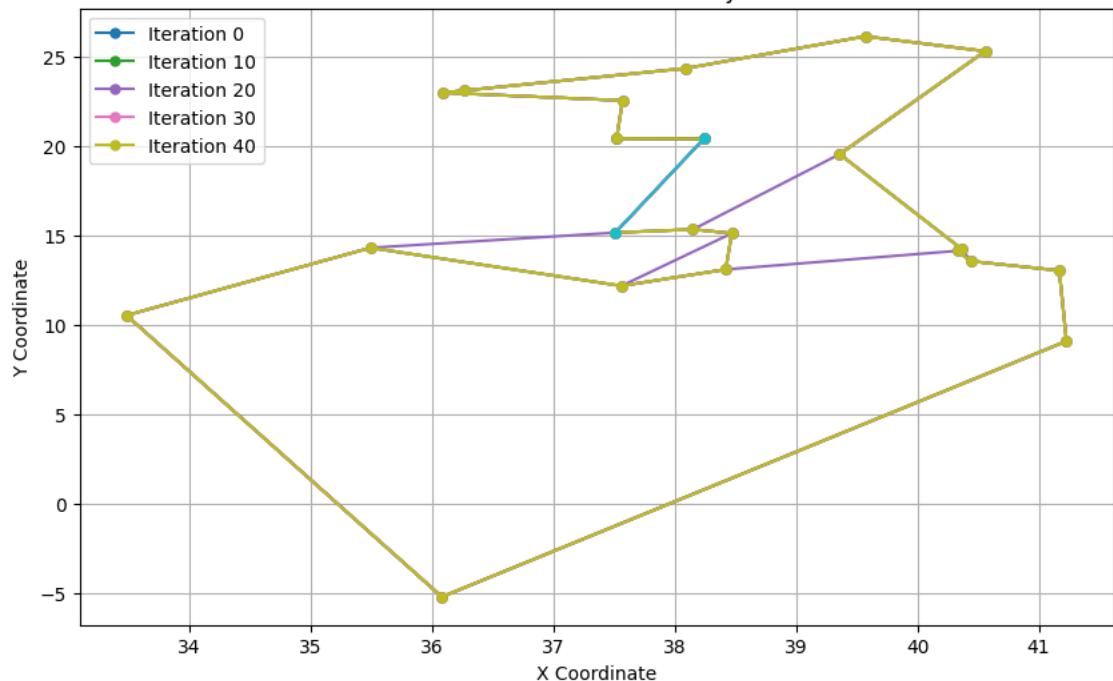
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

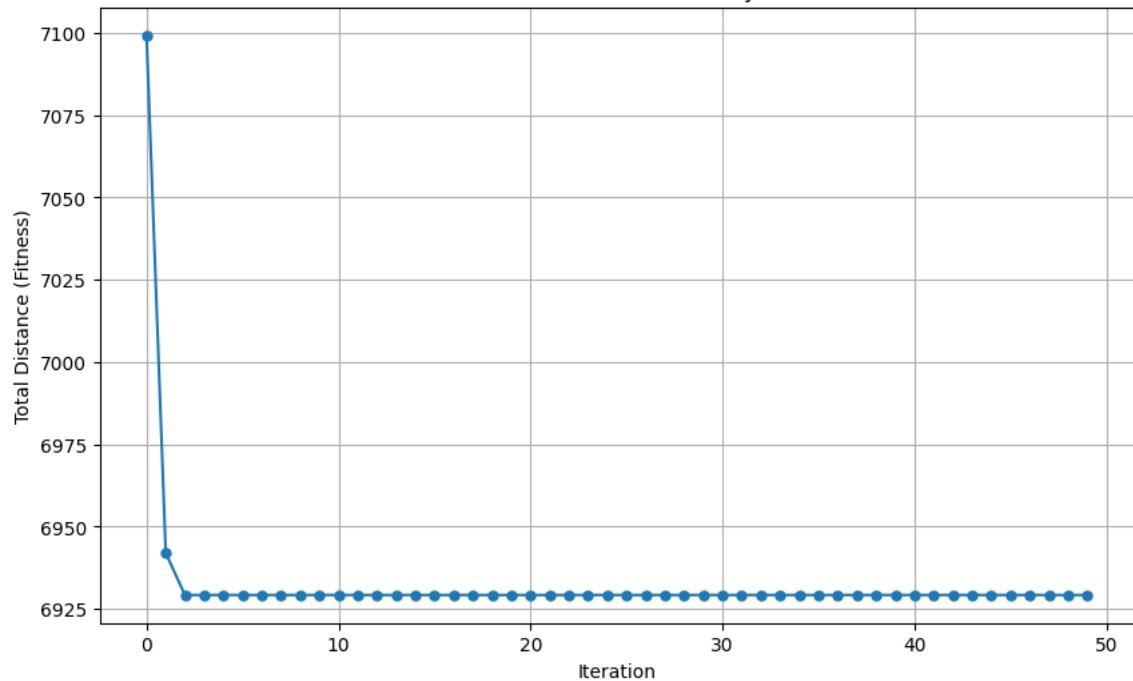
```
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5,
6, 11, 12, 13]
```

```
Total Computation Time: 28.825525522232056 seconds
```

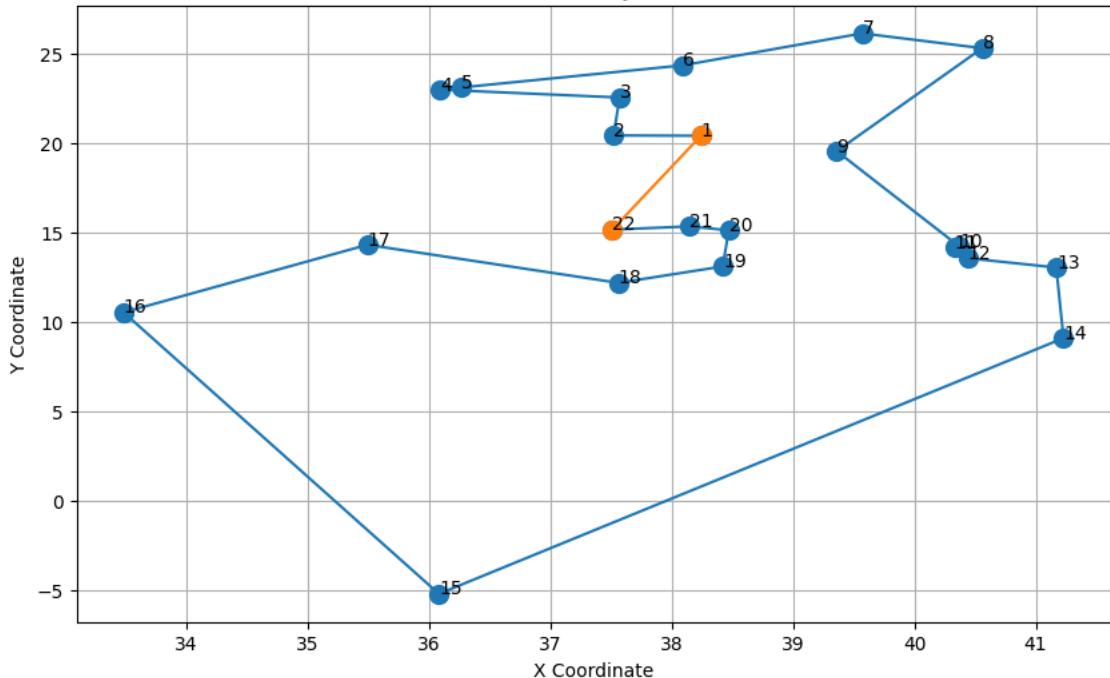
```
Average Computation Time per Iteration: 0.010716862678527832 seconds
```

```
Memory Usage: 3872 bytes
```

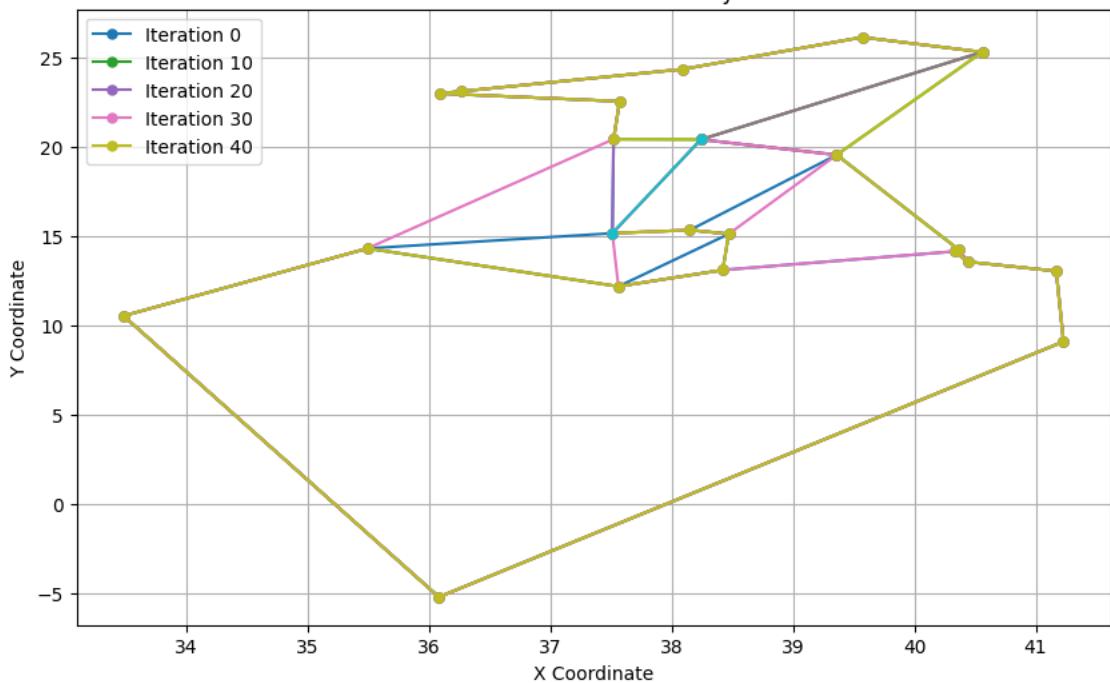
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.5, m=2, epsilon=1e-10

Loaded coordinates for 22 cities from ulysses22.

Best Fitness: 6929.232428647036

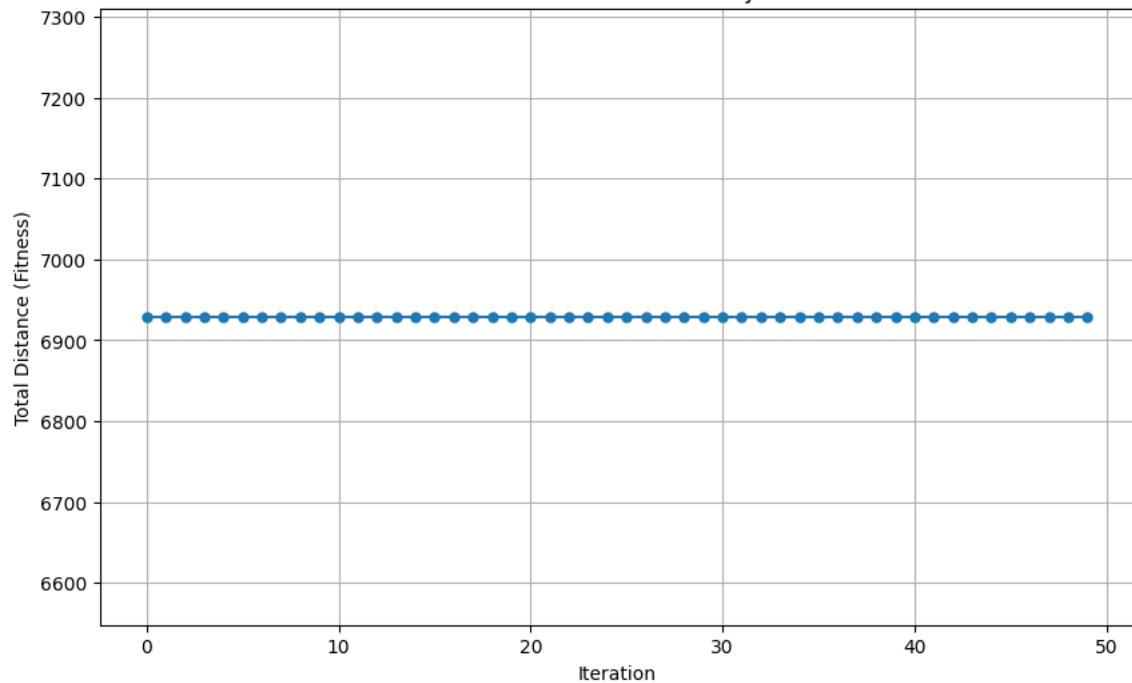
Best Path: [0, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 14, 2, 1, 16, 3, 17, 21, 7]

Total Computation Time: 29.184089183807373 seconds

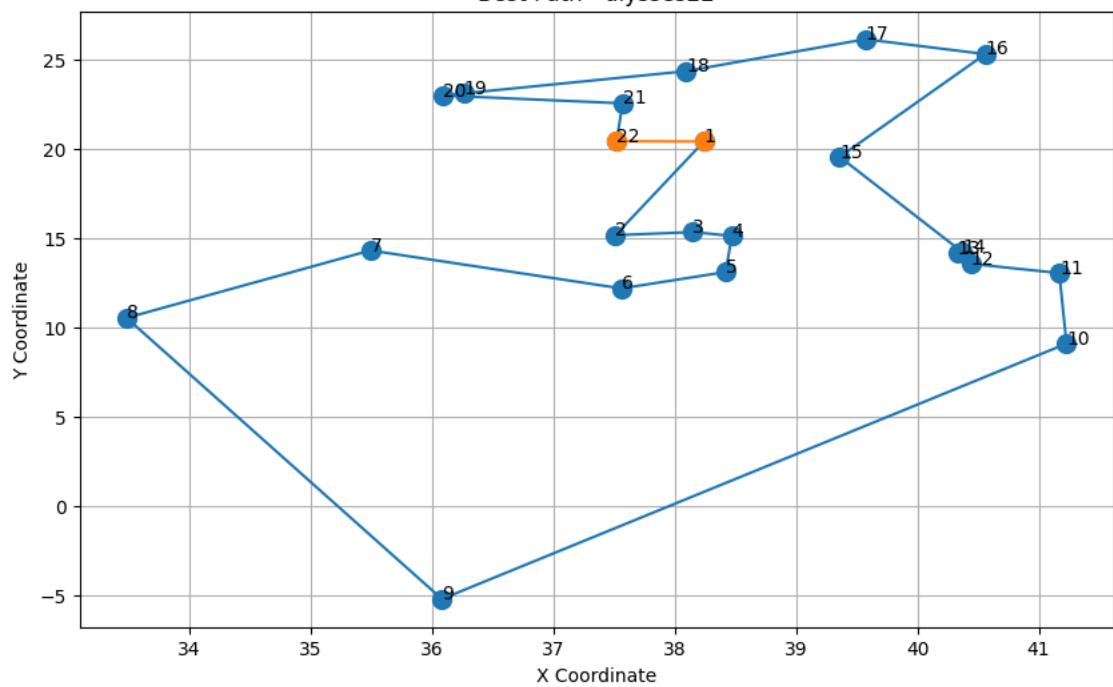
Average Computation Time per Iteration: 0.009919872283935547 seconds

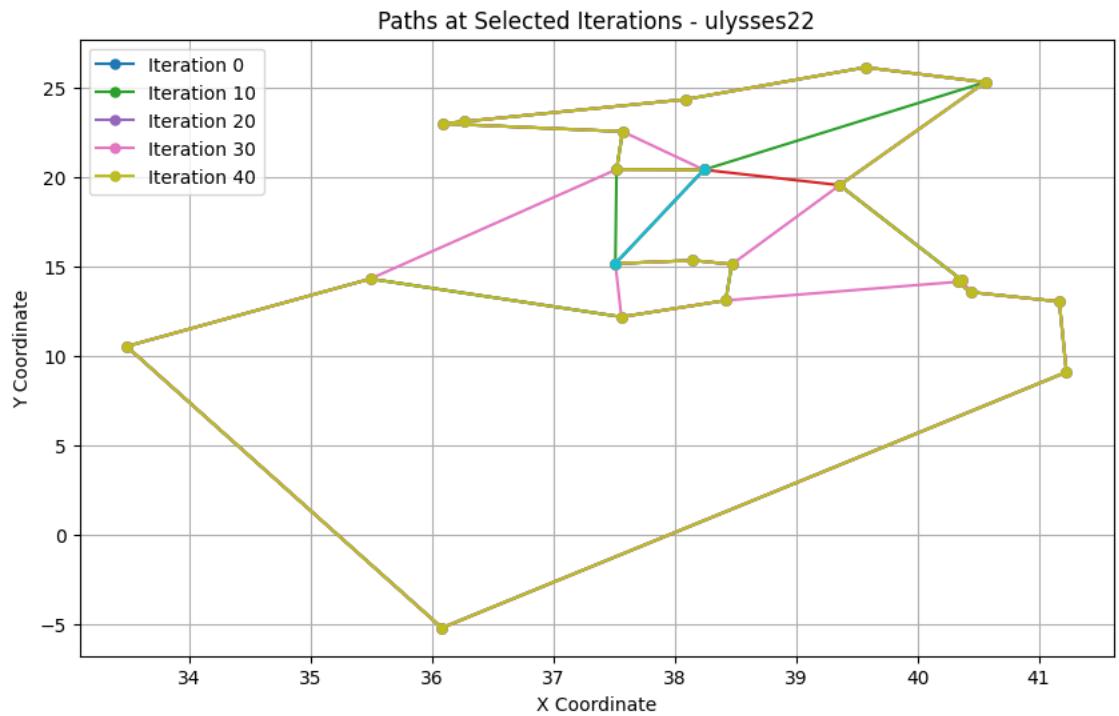
Memory Usage: 3872 bytes

Best Fitness over Iterations - ulysses22



Best Path - ulysses22





```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=1,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

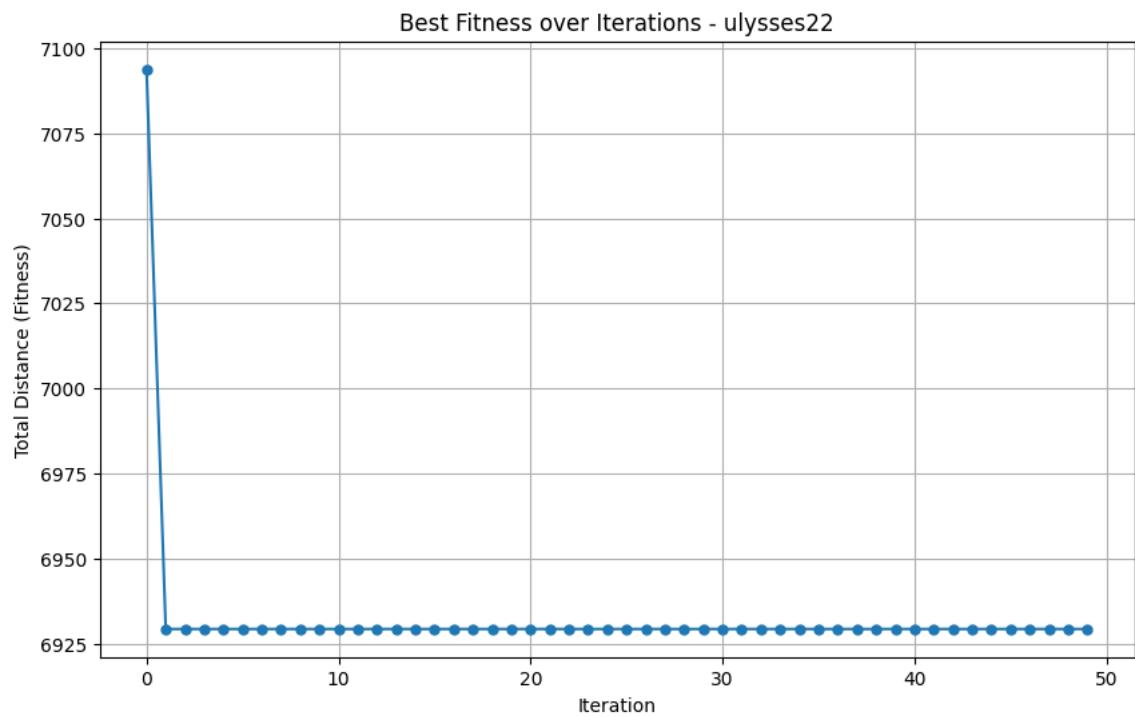
```
Best Fitness: 6929.232428647036
```

```
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5,
6, 11, 12, 13]
```

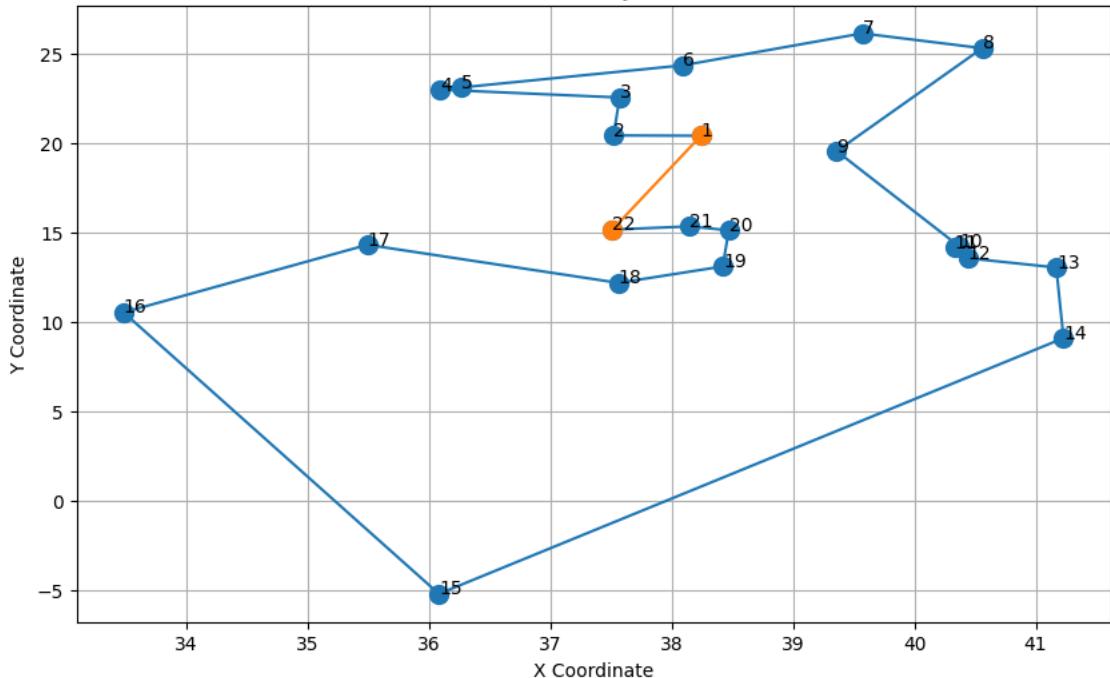
```
Total Computation Time: 27.913583517074585 seconds
```

```
Average Computation Time per Iteration: 0.010197606086730957 seconds
```

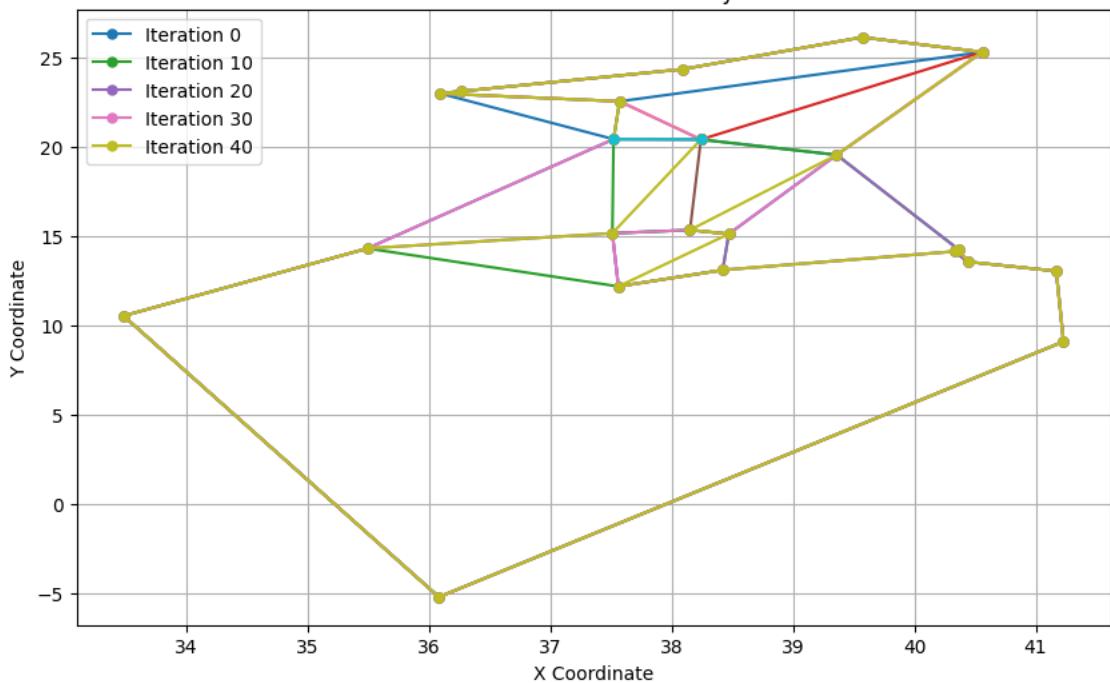
```
Memory Usage: 3872 bytes
```



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

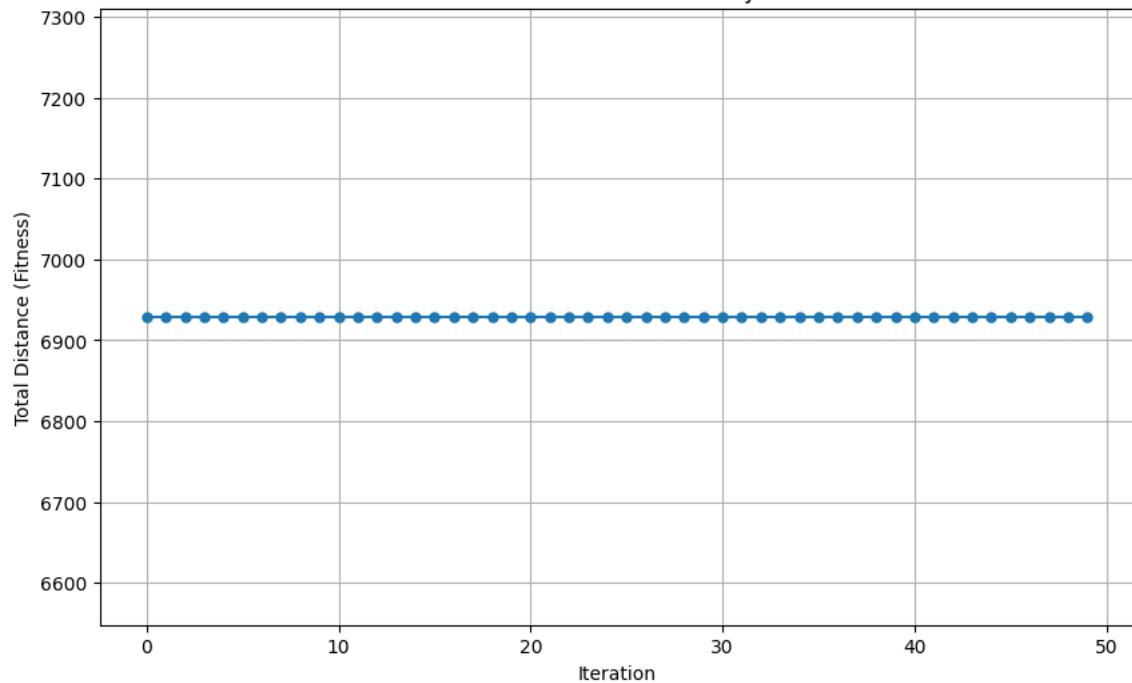
```
Best Path: [0, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 14, 2, 1, 16, 3, 17, 21, 7]
```

```
Total Computation Time: 27.385080575942993 seconds
```

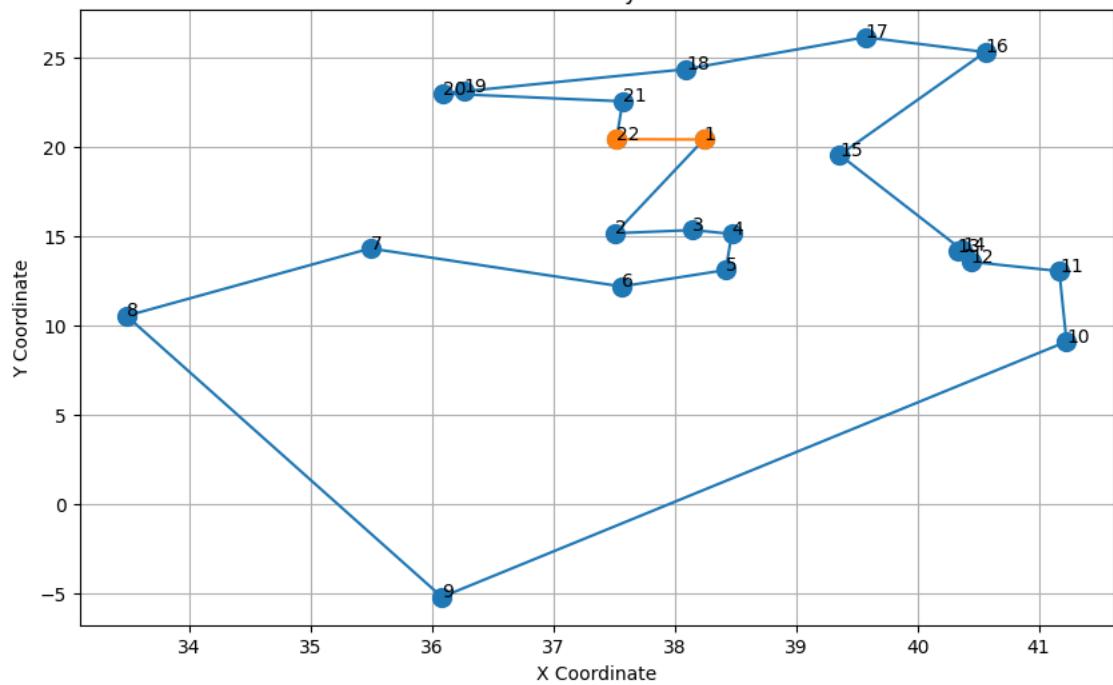
```
Average Computation Time per Iteration: 0.009905915260314941 seconds
```

```
Memory Usage: 3872 bytes
```

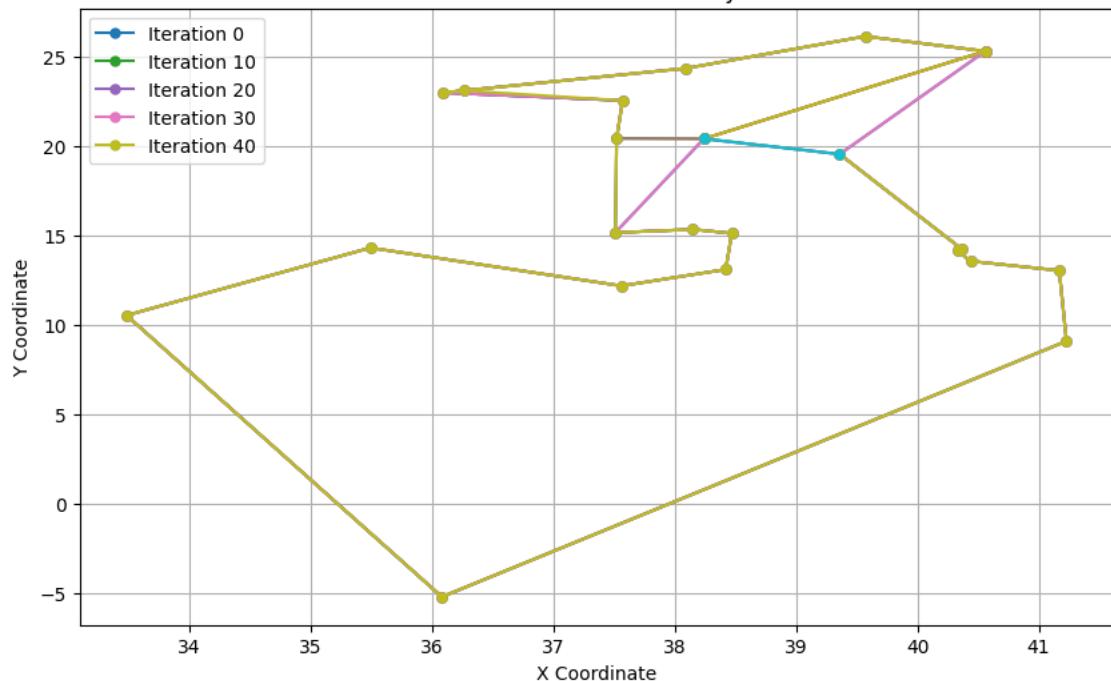
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=3,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

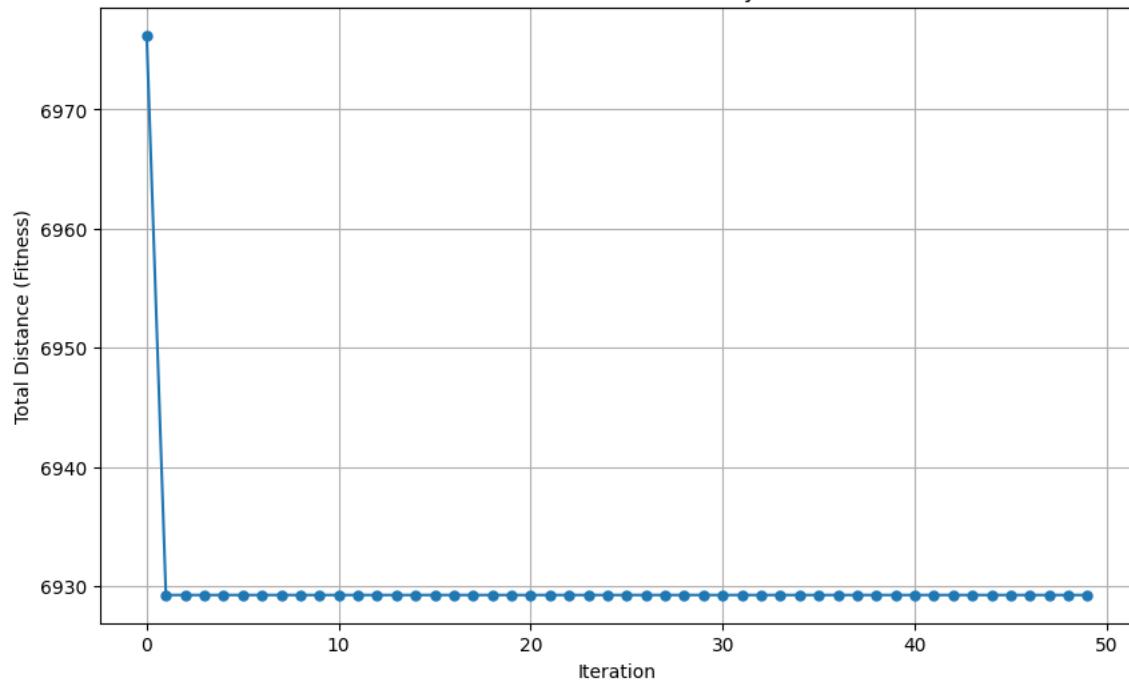
```
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5, 6, 11, 12, 13]
```

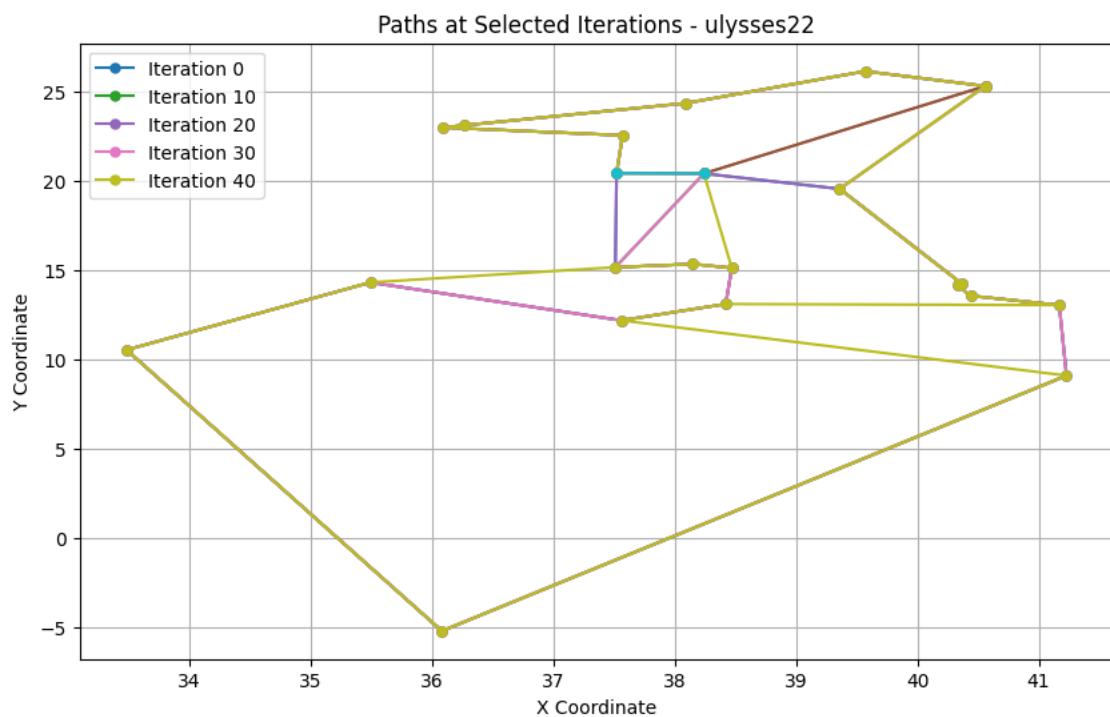
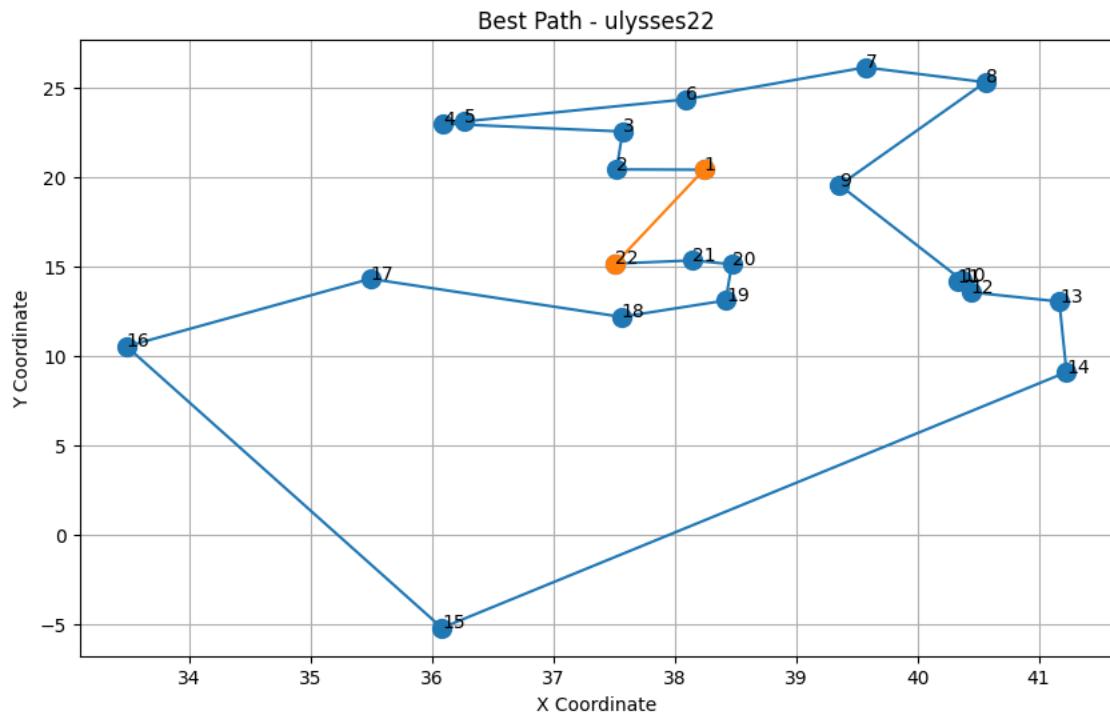
```
Total Computation Time: 25.93674659729004 seconds
```

```
Average Computation Time per Iteration: 0.010084972381591797 seconds
```

```
Memory Usage: 3872 bytes
```

Best Fitness over Iterations - ulysses22





```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=4,
epsilon=1e-10
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

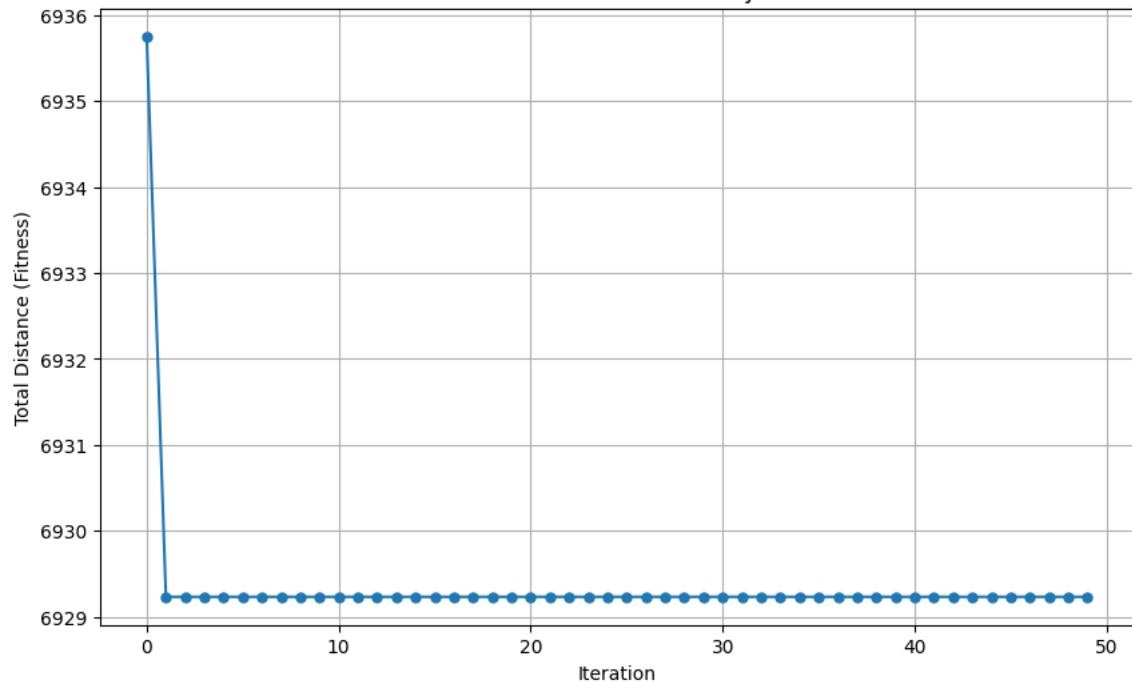
```
Best Path: [0, 13, 12, 11, 11, 6, 5, 14, 4, 10, 8, 9, 18, 19, 20, 15, 2, 1, 16, 3, 17, 21, 7]
```

```
Total Computation Time: 30.94769597053528 seconds
```

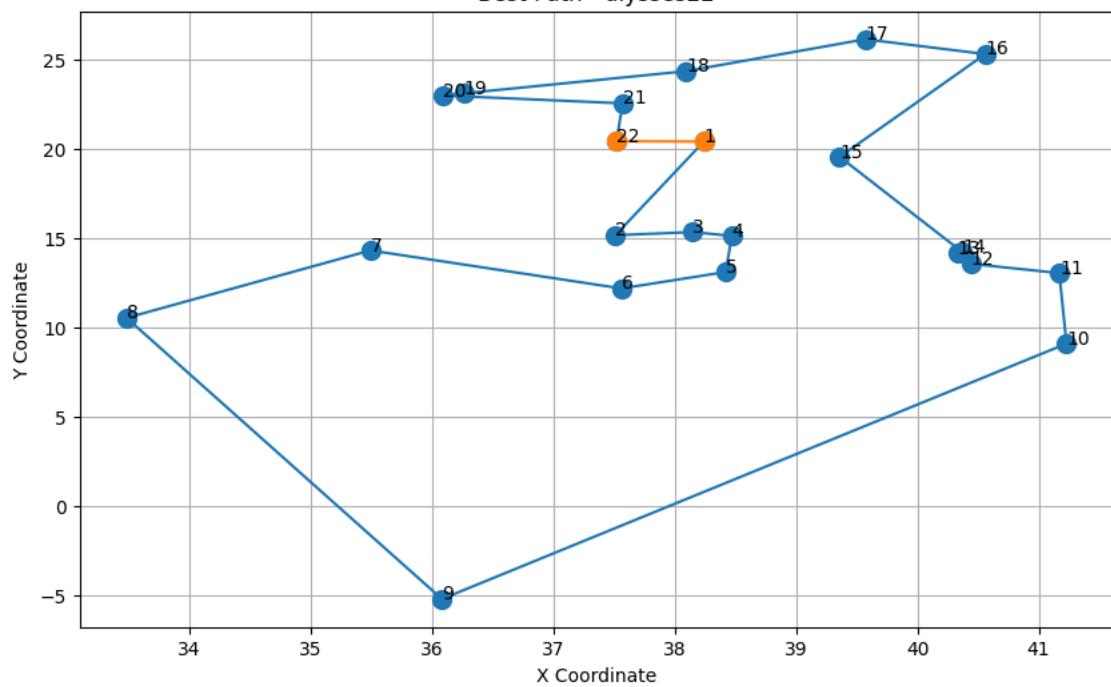
```
Average Computation Time per Iteration: 0.010927085876464843 seconds
```

```
Memory Usage: 3872 bytes
```

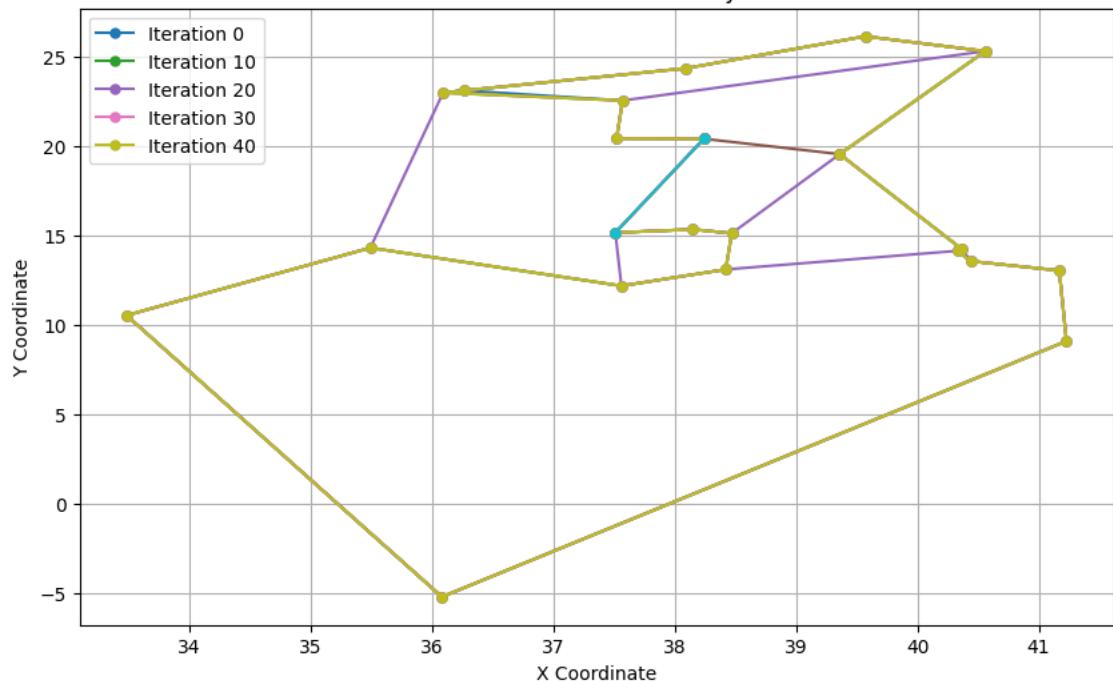
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=2, epsilon=1e-10

Loaded coordinates for 22 cities from ulysses22.

Best Fitness: 6929.232428647036

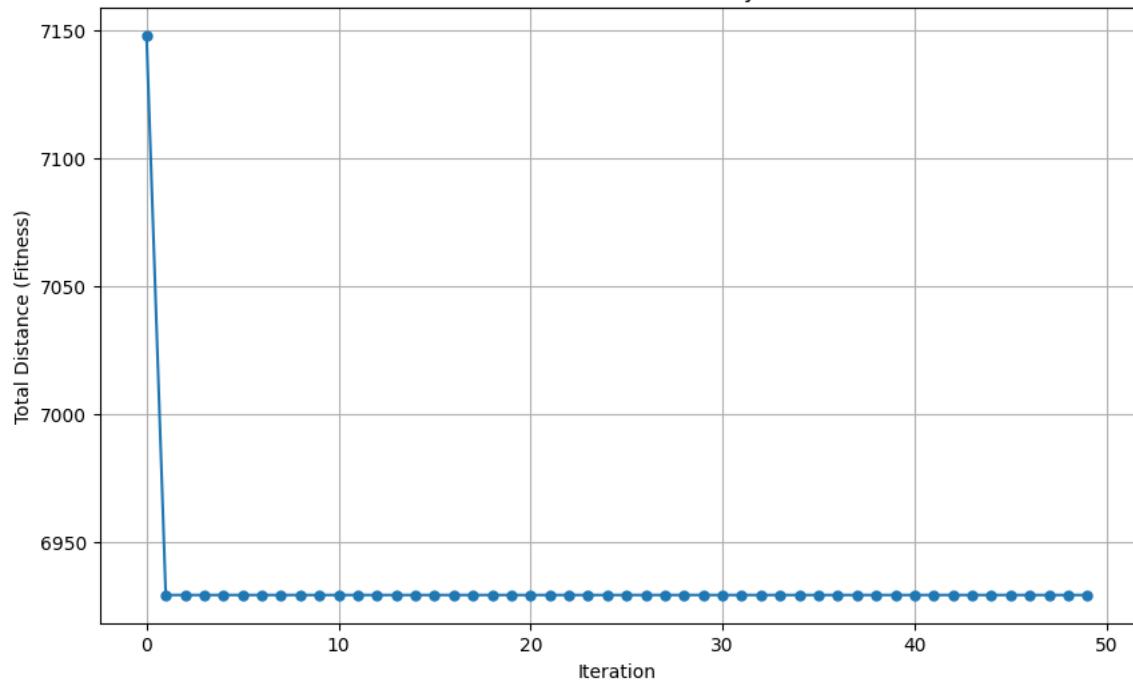
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5, 6, 11, 12, 13]

Total Computation Time: 26.54521369934082 seconds

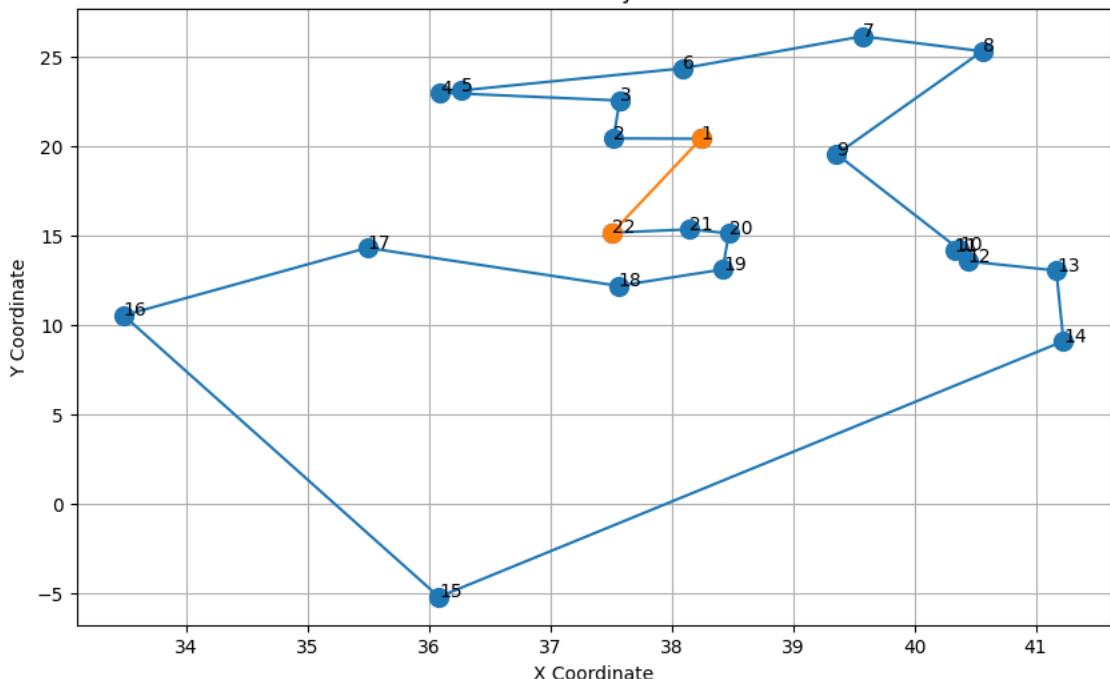
Average Computation Time per Iteration: 0.009967236518859864 seconds

Memory Usage: 3872 bytes

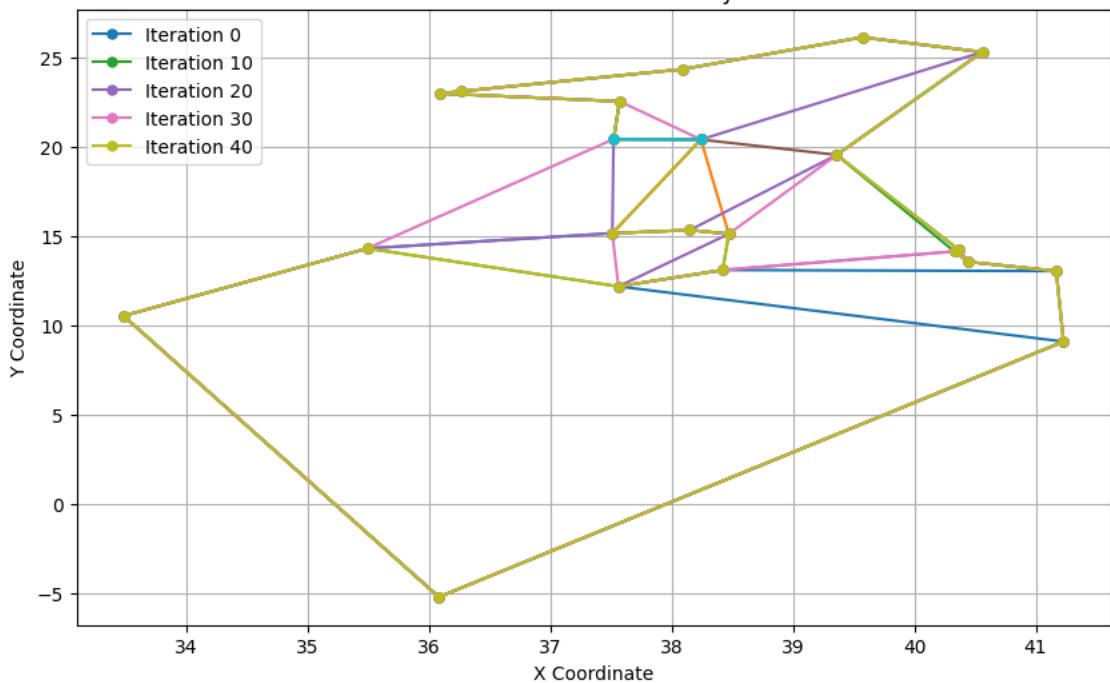
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-08
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

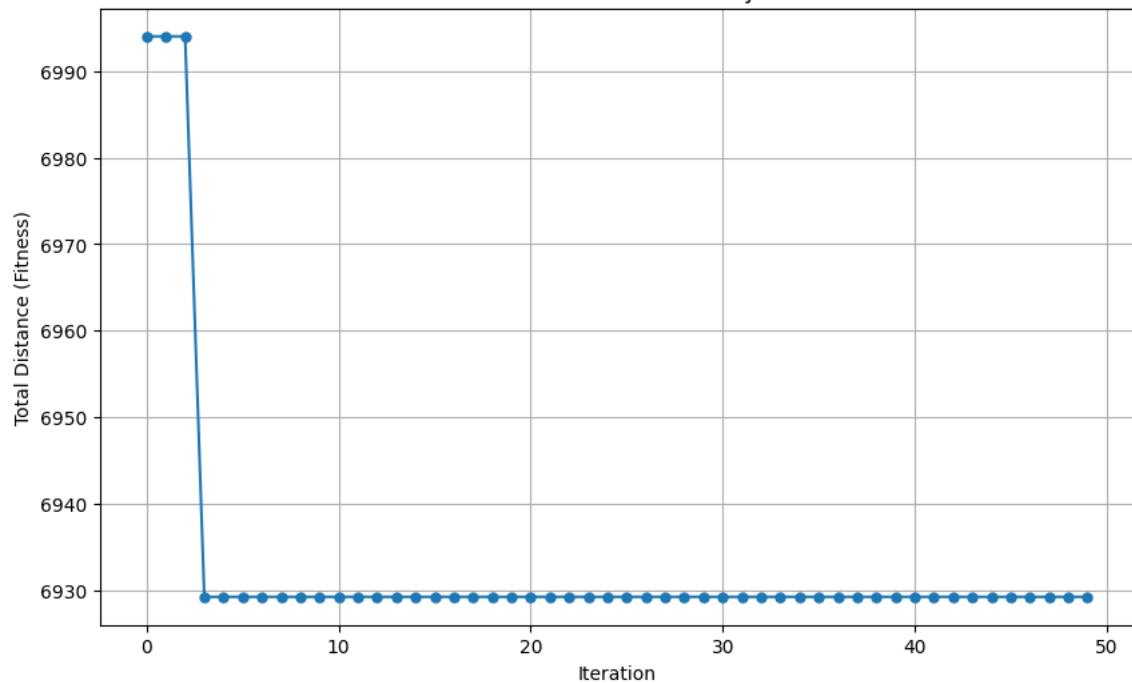
```
Best Path: [0, 7, 21, 17, 3, 16, 1, 2, 15, 20, 19, 18, 9, 8, 10, 4, 14, 5, 6, 11, 12, 13]
```

```
Total Computation Time: 29.295284509658813 seconds
```

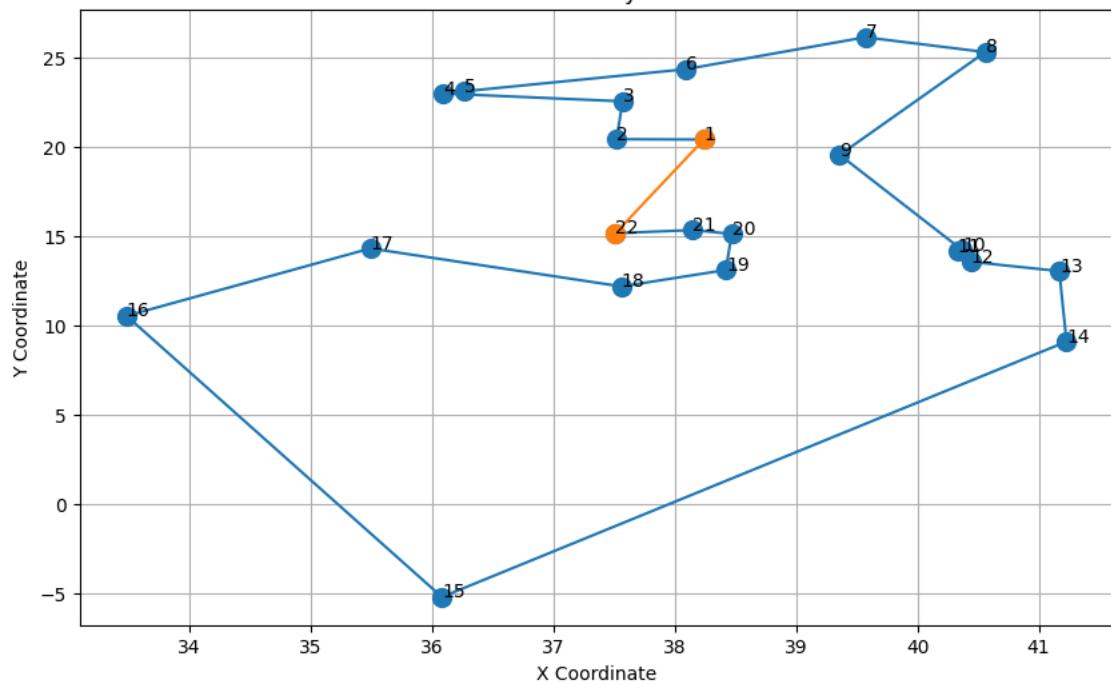
```
Average Computation Time per Iteration: 0.01033641815185547 seconds
```

```
Memory Usage: 3872 bytes
```

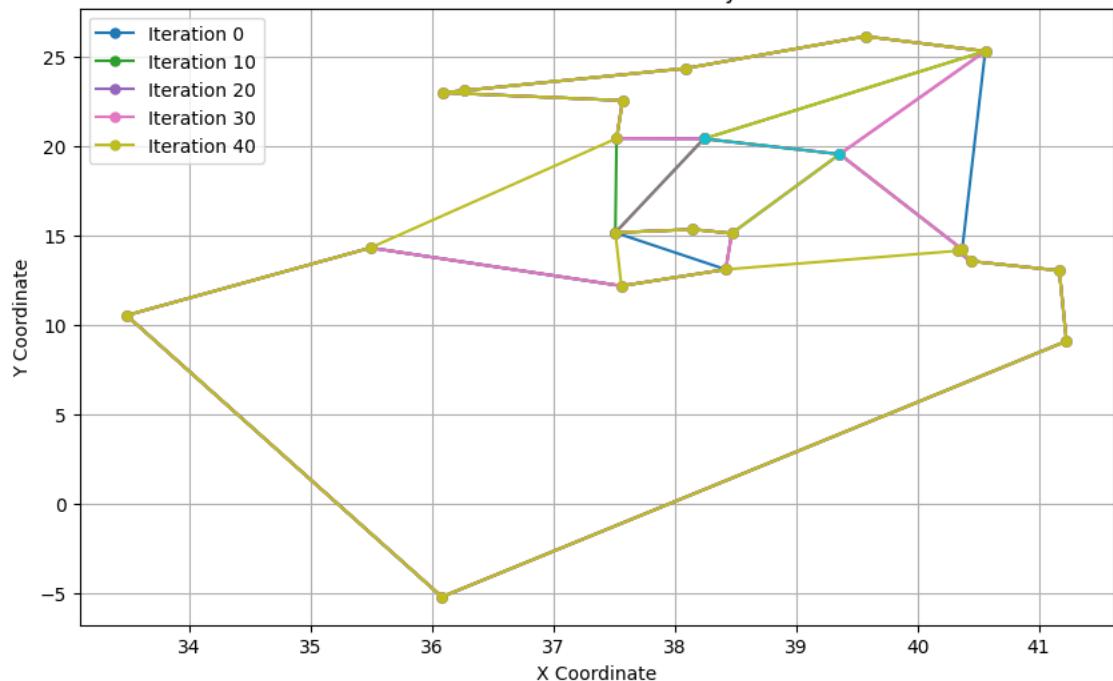
Best Fitness over Iterations - ulysses22



Best Path - ulysses22



Paths at Selected Iterations - ulysses22



```
Running simulation with dataset=ulysses22, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-06
```

```
Loaded coordinates for 22 cities from ulysses22.
```

```
Best Fitness: 6929.232428647036
```

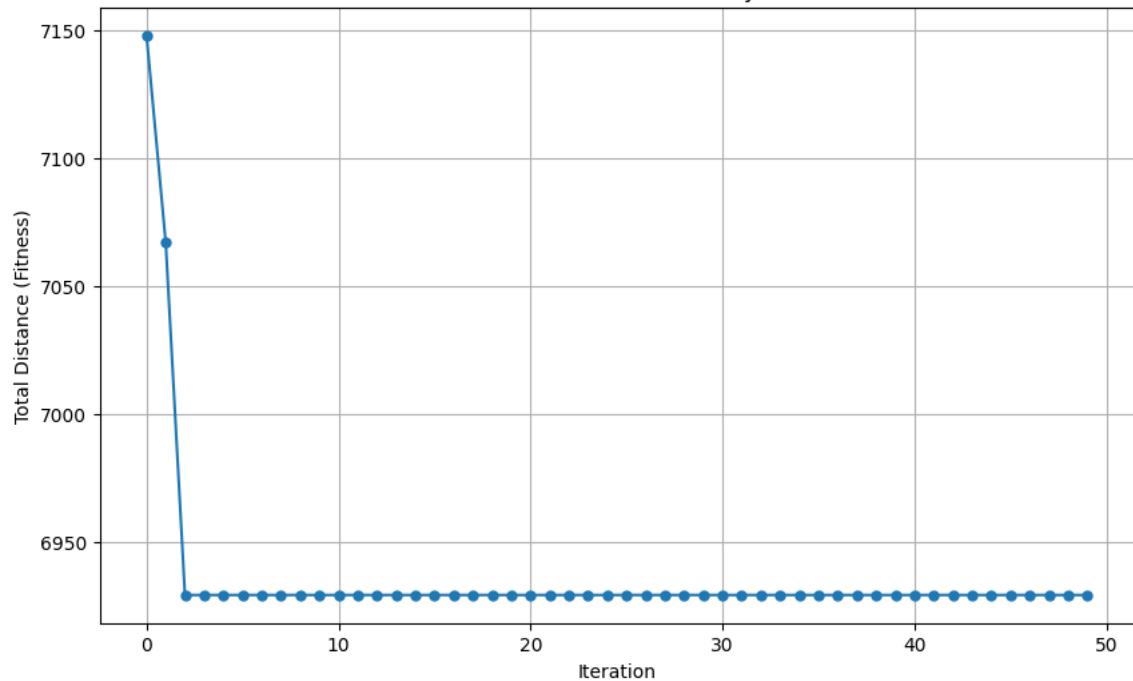
```
Best Path: [0, 13, 12, 11, 6, 5, 14, 4, 10, 8, 9, 18, 19, 20, 15, 2, 1, 16,
3, 17, 21, 7]
```

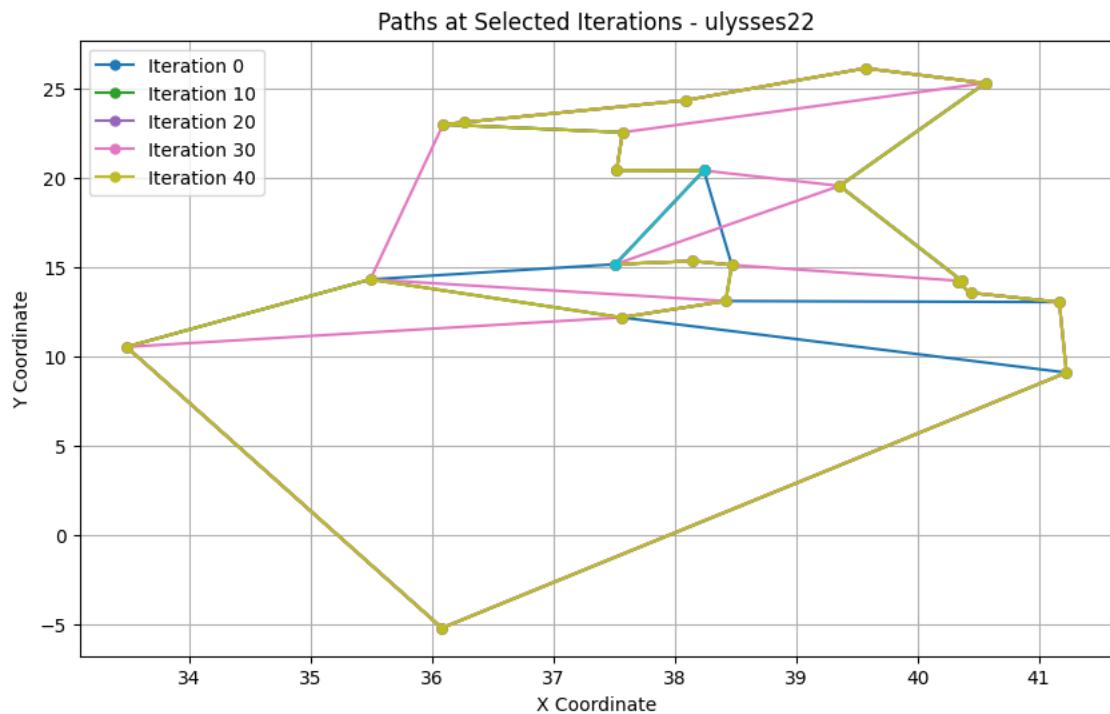
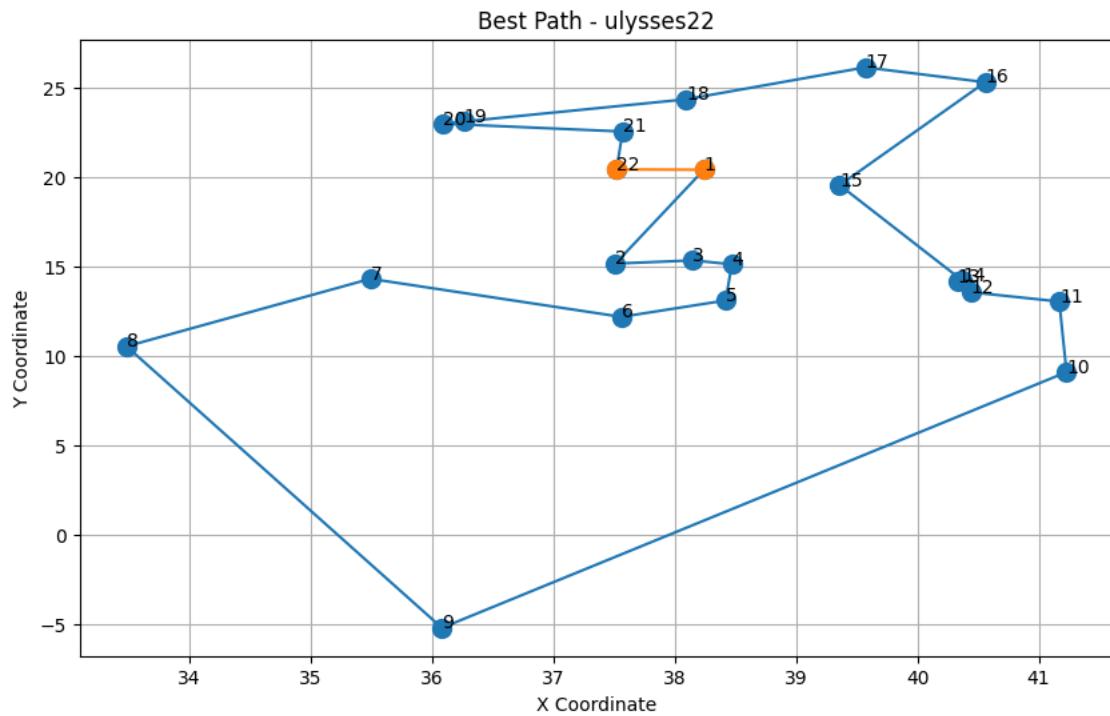
```
Total Computation Time: 26.991448163986206 seconds
```

```
Average Computation Time per Iteration: 0.010050115585327148 seconds
```

```
Memory Usage: 3872 bytes
```

Best Fitness over Iterations - ulysses22





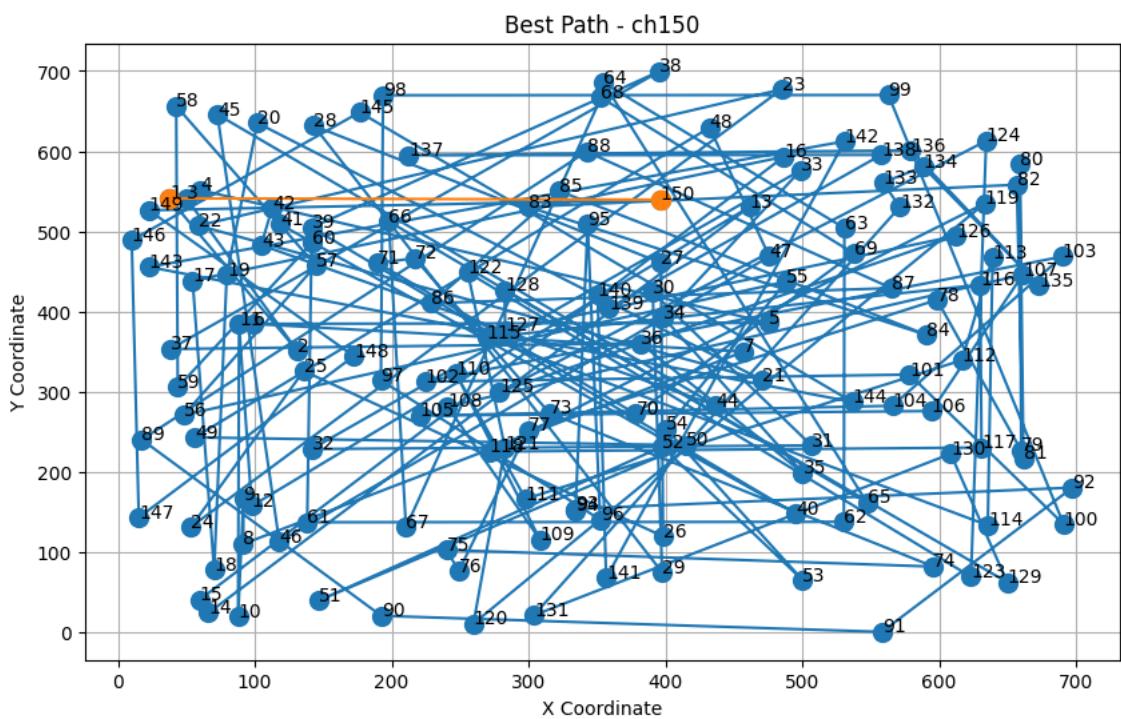
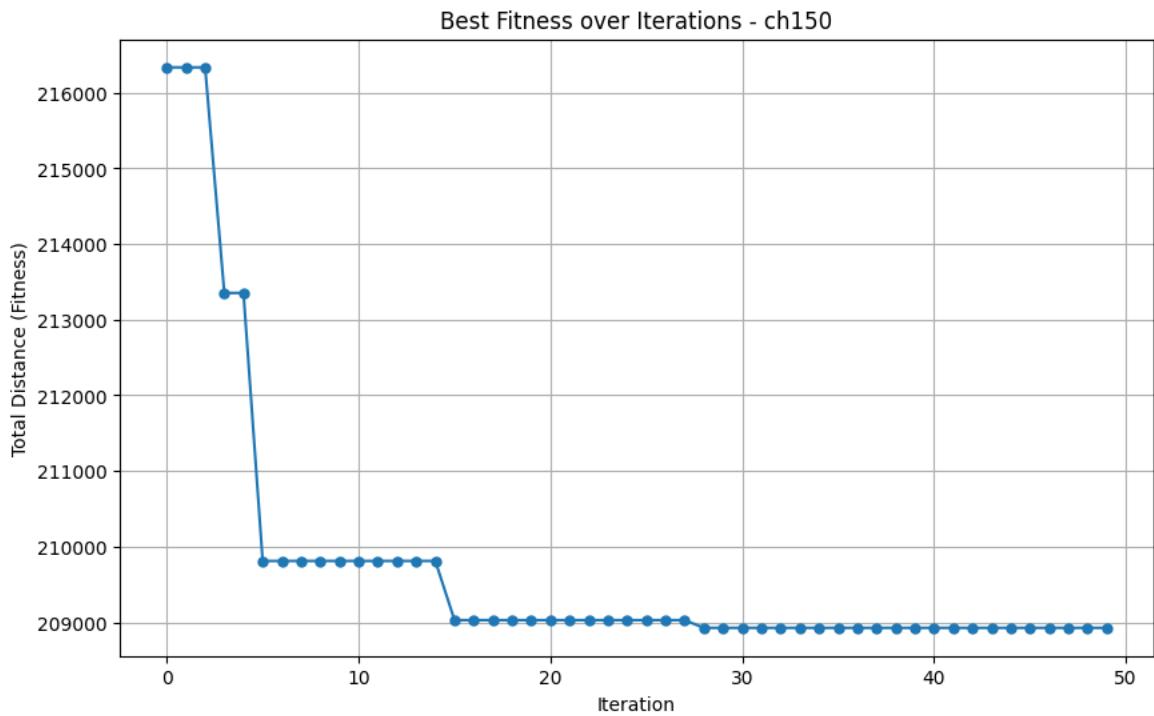
```
Running simulation with dataset=ch150, decay_rate=0.001, k=0.1, m=2,
epsilon=1e-10
```

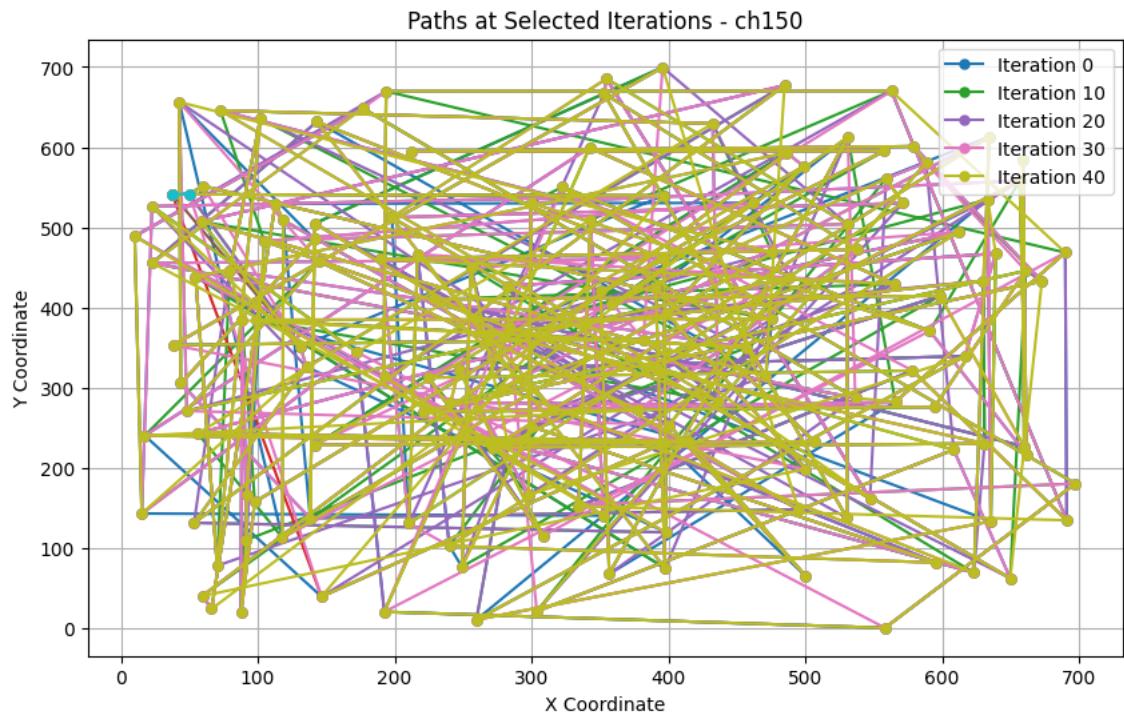
```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 208926.66700001917
```

```
Best Path: [0, 93, 97, 102, 50, 9, 108, 44, 149, 90, 112, 114, 140, 118, 67, 54, 47, 127, 62, 106, 42, 33, 131, 3, 87, 128, 89, 4, 26, 45, 115, 20, 57, 137, 100, 133, 2, 84, 7, 40, 83, 6, 29, 66, 94, 70, 24, 64, 124, 37, 105, 22, 116, 31, 19, 148, 95, 81, 61, 88, 43, 56, 80, 141, 38, 123, 63, 17, 109, 130, 34, 92, 76, 59, 111, 135, 121, 119, 35, 113, 60, 98, 145, 138, 25, 51, 46, 74, 21, 12, 139, 10, 48, 146, 55, 143, 78, 142, 136, 147, 52, 58, 5, 23, 77, 117, 8, 14, 144, 15, 71, 39, 36, 129, 110, 41, 68, 79, 18, 73, 13, 125, 65, 101, 132, 1, 104, 32, 16, 126, 122, 28, 85, 107, 27, 69, 96, 134, 53, 91, 30, 49, 72, 11, 99, 75, 103, 120, 86, 82]
```

Total Computation Time: 728.6432685852051 seconds
Average Computation Time per Iteration: 0.4692628288269043 seconds
Memory Usage: 180000 bytes





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 206493.73366571823
```

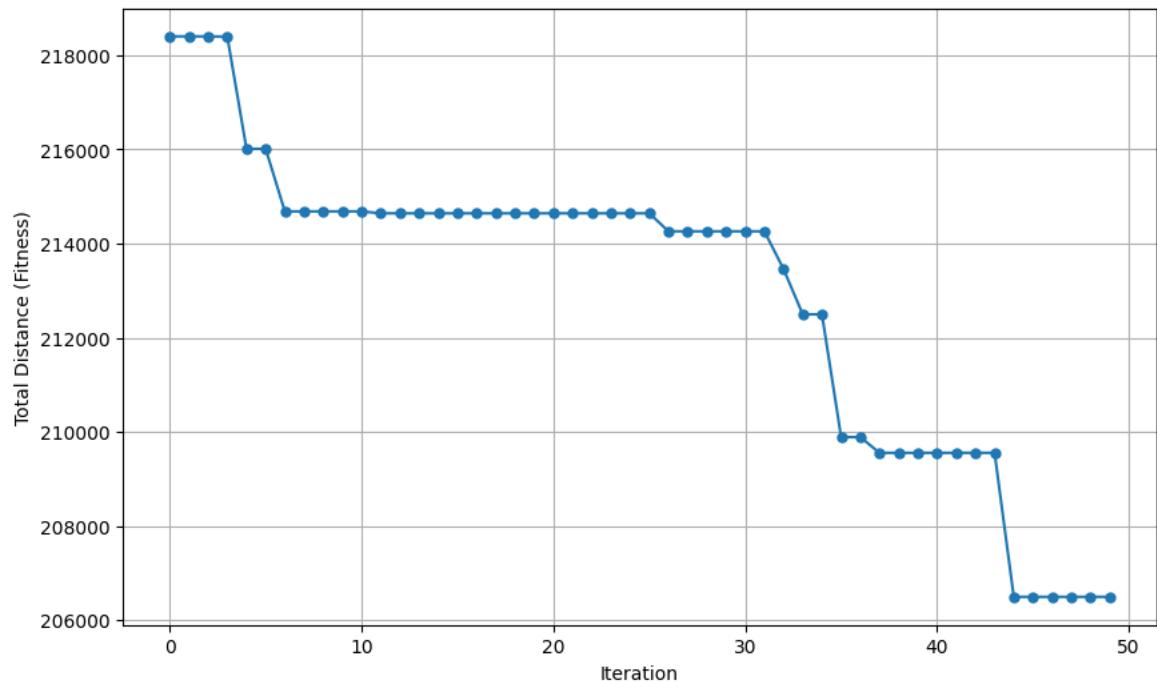
```
Best Path: [0, 82, 86, 120, 103, 75, 78, 143, 55, 146, 48, 147, 52, 58,
144, 5, 23, 136, 142, 99, 11, 72, 4, 89, 128, 3, 131, 87, 33, 42, 62, 106,
127, 47, 54, 67, 118, 6, 83, 40, 61, 88, 43, 7, 84, 2, 133, 100, 137, 57,
20, 115, 45, 26, 49, 30, 91, 134, 53, 85, 28, 122, 107, 96, 69, 27, 77,
117, 14, 8, 16, 126, 104, 32, 36, 129, 18, 41, 110, 68, 79, 101, 65, 132,
1, 125, 135, 111, 92, 76, 59, 121, 119, 51, 35, 113, 60, 98, 13, 73, 39,
15, 71, 145, 138, 25, 10, 139, 12, 74, 46, 34, 17, 63, 123, 38, 141, 80,
56, 109, 130, 95, 81, 70, 24, 64, 94, 66, 29, 140, 114, 90, 112, 149, 44,
108, 9, 124, 19, 148, 31, 116, 21, 105, 22, 37, 50, 102, 97, 93]
```

```
Total Computation Time: 735.3853101730347 seconds
```

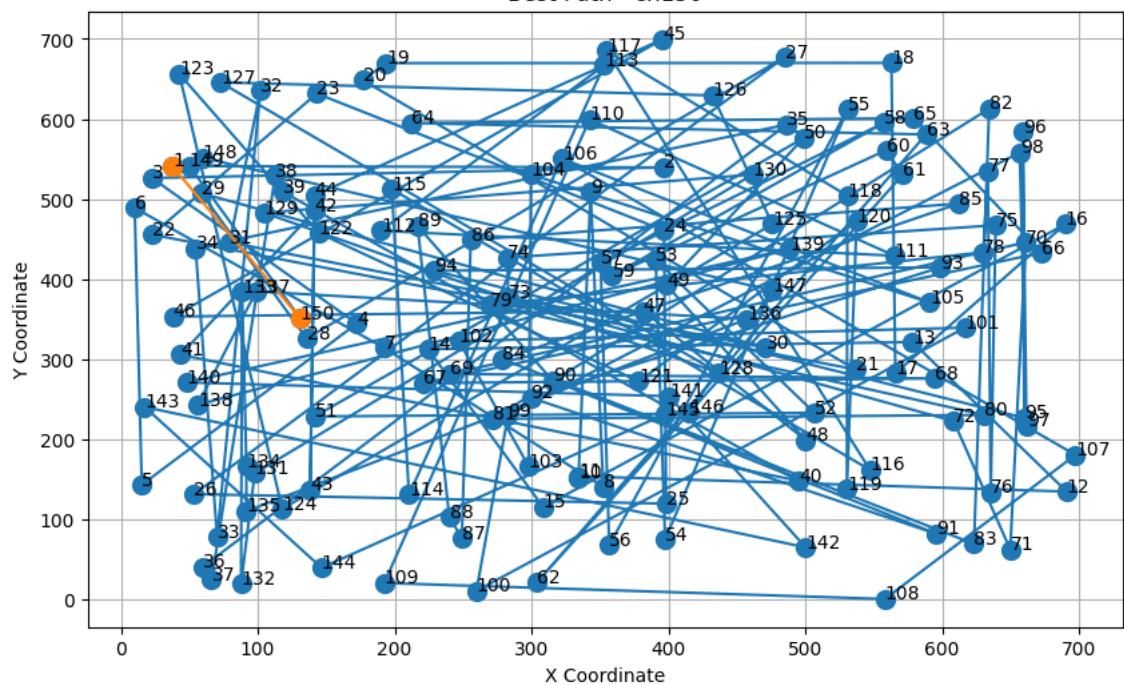
```
Average Computation Time per Iteration: 0.42787737846374513 seconds
```

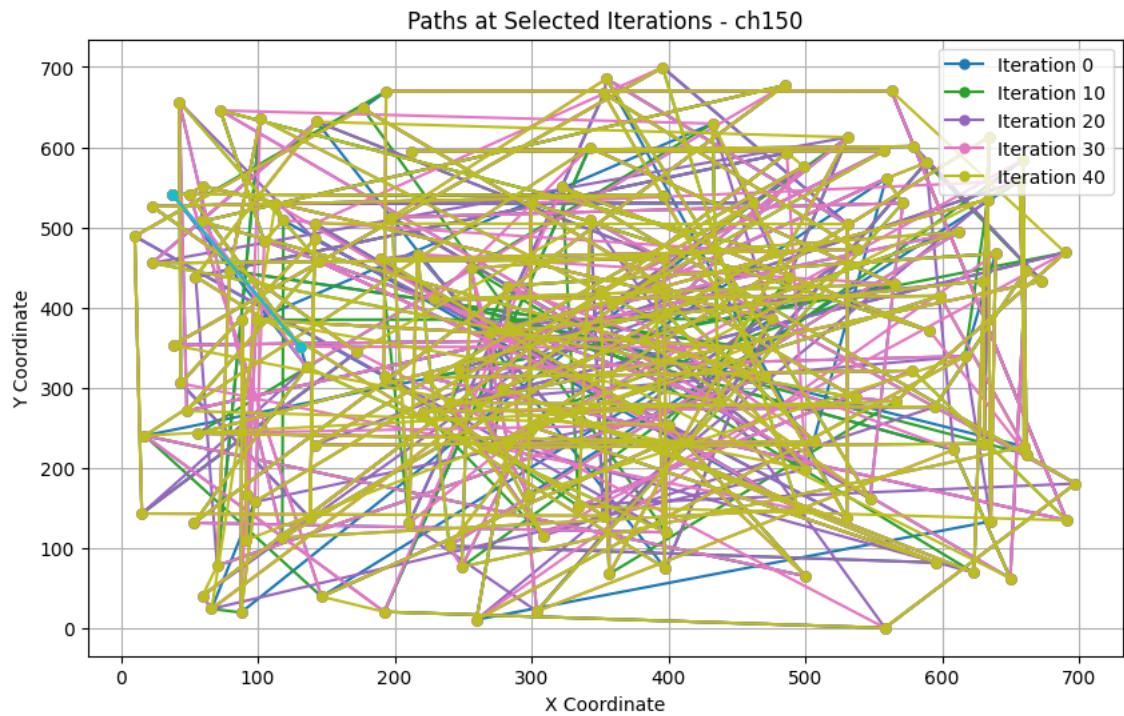
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.1, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 207490.40227126656
```

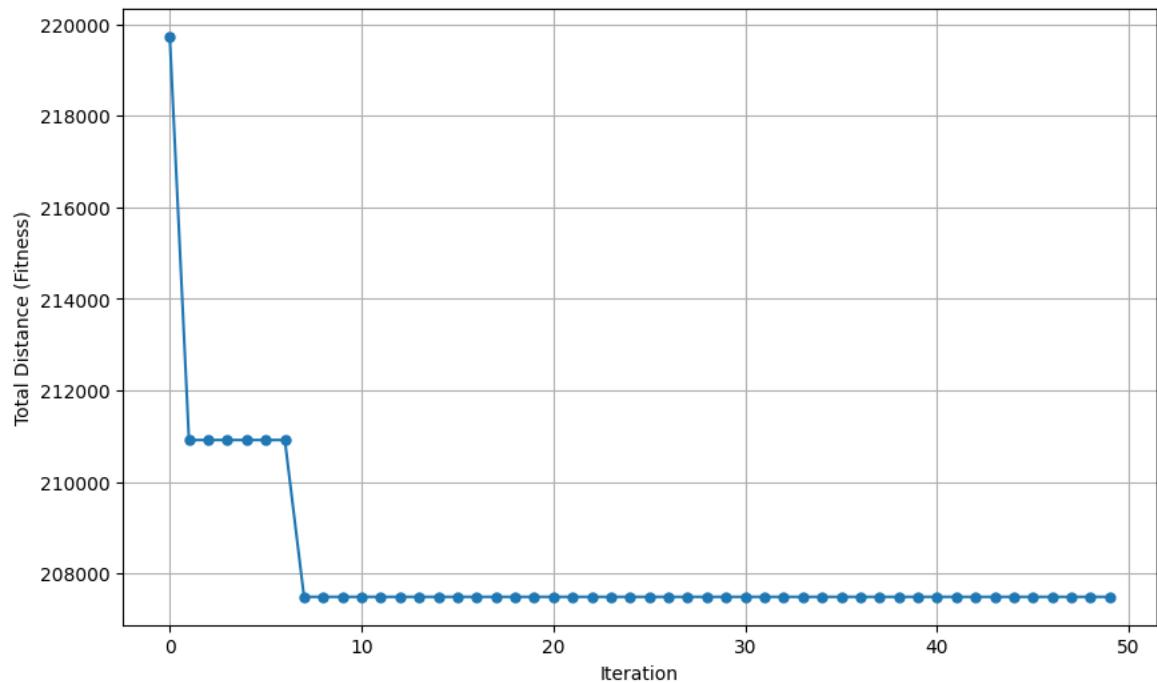
```
Best Path: [0, 105, 22, 21, 130, 109, 34, 74, 46, 76, 59, 121, 119, 51, 60,
113, 35, 135, 13, 132, 125, 1, 111, 92, 63, 17, 56, 80, 141, 38, 123, 28,
85, 53, 49, 30, 91, 134, 96, 69, 27, 8, 16, 126, 107, 122, 104, 32, 36,
129, 18, 110, 41, 68, 79, 101, 65, 73, 39, 15, 71, 145, 98, 138, 25, 12,
139, 10, 48, 146, 55, 143, 78, 142, 136, 147, 52, 58, 144, 14, 117, 77, 5,
23, 99, 11, 72, 89, 4, 47, 54, 26, 45, 115, 20, 57, 137, 100, 133, 2, 84,
40, 7, 43, 88, 61, 81, 95, 31, 116, 37, 124, 19, 148, 24, 70, 83, 29, 94,
64, 66, 44, 149, 112, 90, 114, 140, 6, 118, 67, 127, 62, 106, 42, 108, 9,
50, 102, 97, 93, 87, 33, 131, 3, 128, 75, 103, 120, 86, 82]
```

```
Total Computation Time: 729.7126567363739 seconds
```

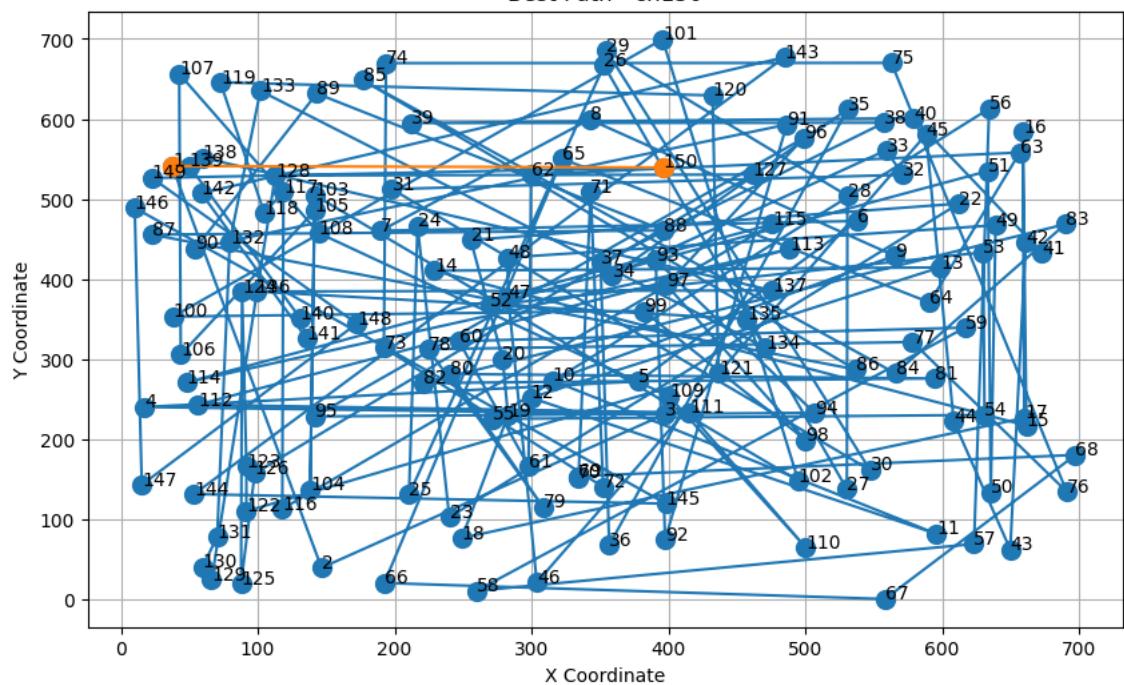
```
Average Computation Time per Iteration: 0.4714158582687378 seconds
```

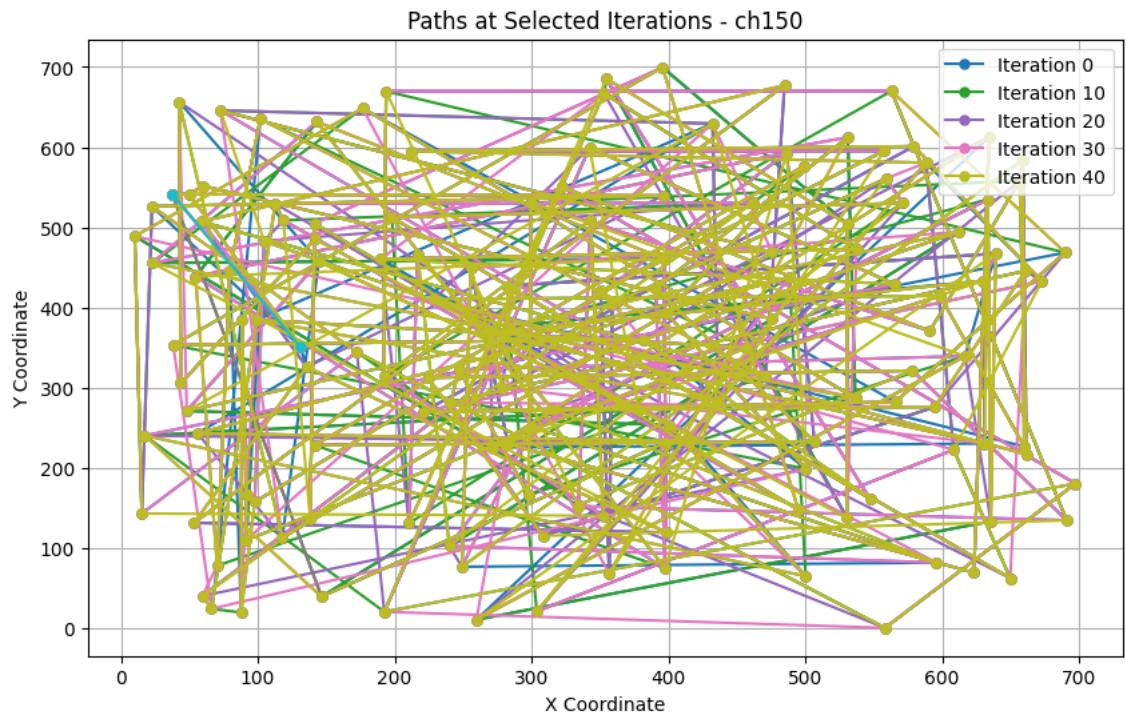
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





Running simulation with dataset=ch150, decay_rate=4.444444444444447e-05, k=0.1, m=2, epsilon=1e-10

Loaded coordinates for 150 cities from ch150.

Best Fitness: 207787.14536289085

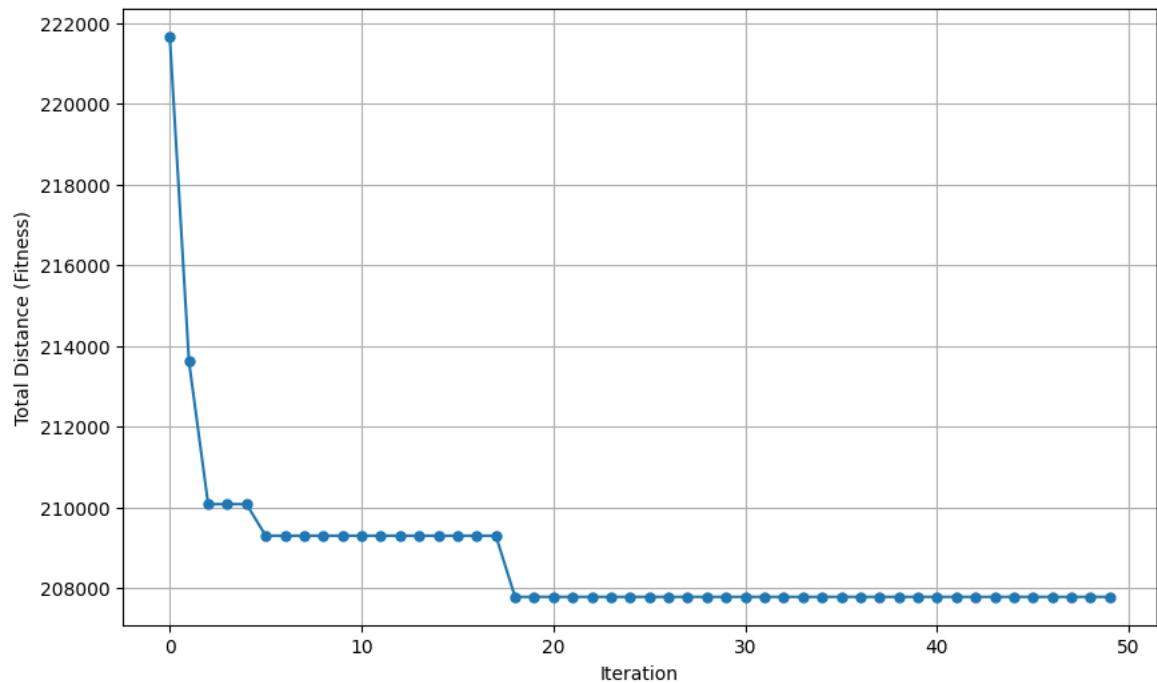
Best Path: [0, 93, 97, 102, 50, 37, 124, 19, 148, 31, 116, 22, 105, 21, 74, 46, 51, 60, 98, 113, 35, 119, 121, 135, 125, 132, 1, 111, 59, 76, 92, 63, 17, 109, 34, 130, 95, 81, 61, 88, 43, 7, 40, 2, 84, 80, 56, 141, 123, 38, 133, 100, 137, 57, 20, 115, 45, 54, 67, 118, 140, 6, 83, 70, 24, 94, 64, 66, 29, 114, 90, 112, 149, 44, 9, 108, 33, 87, 3, 131, 42, 106, 62, 127, 47, 4, 89, 128, 72, 26, 49, 30, 91, 53, 85, 28, 122, 107, 134, 96, 69, 27, 77, 5, 23, 11, 99, 75, 103, 143, 78, 142, 136, 147, 55, 48, 146, 52, 58, 144, 14, 117, 8, 16, 126, 104, 32, 36, 129, 18, 41, 110, 68, 79, 101, 65, 13, 73, 39, 15, 71, 145, 138, 25, 12, 10, 139, 120, 86, 82]

Total Computation Time: 715.4620954990387 seconds

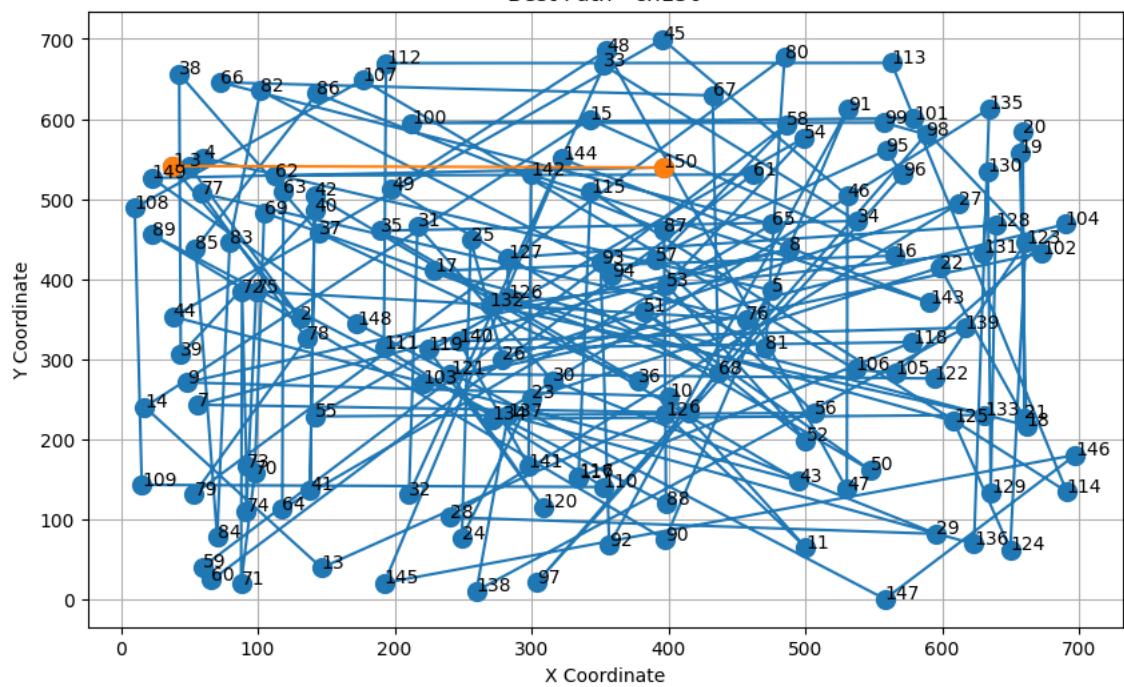
Average Computation Time per Iteration: 0.42328481674194335 seconds

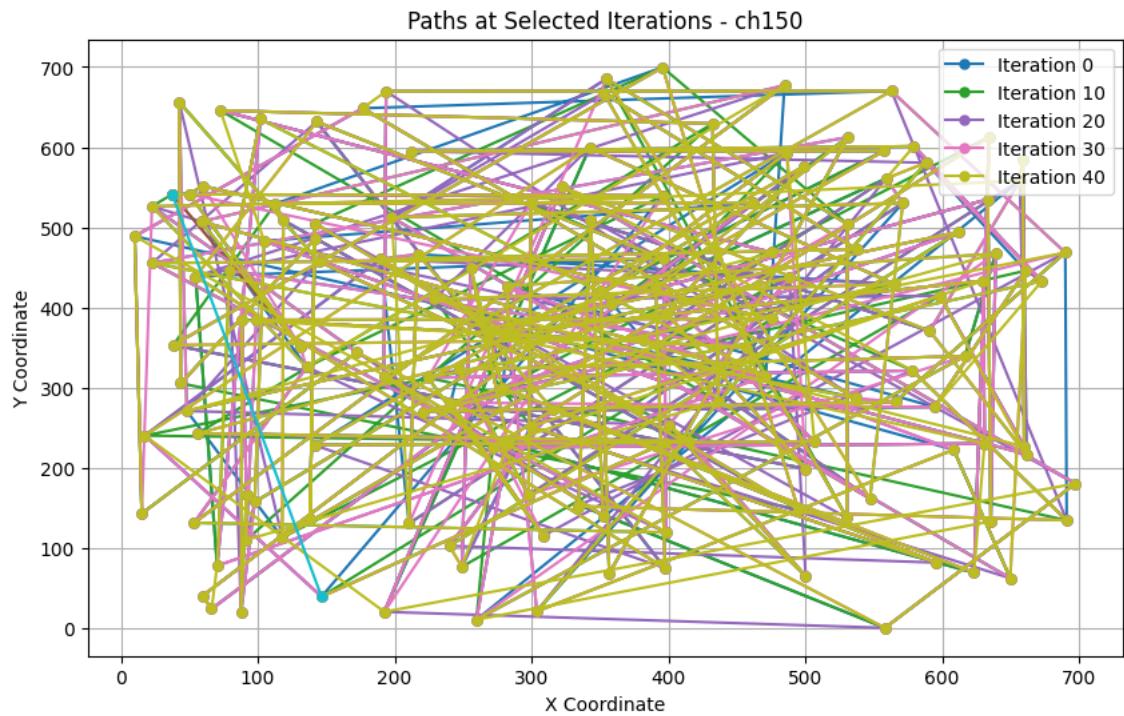
Memory Usage: 180000 bytes

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.01, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 208339.02383110623
```

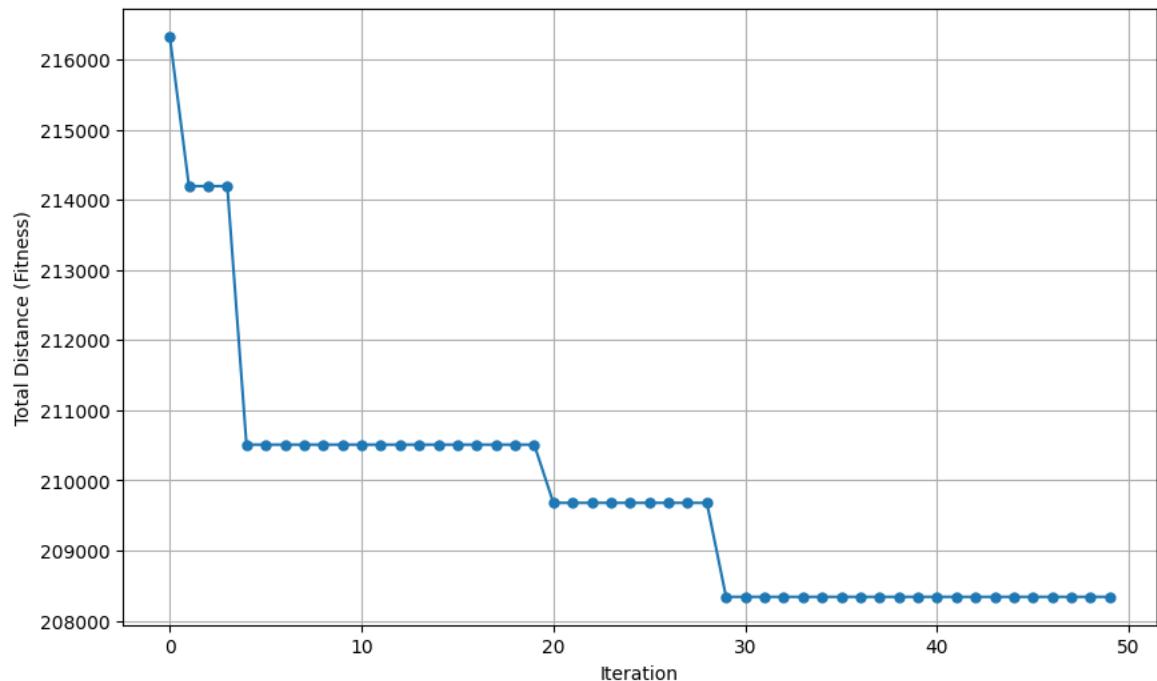
```
Best Path: [0, 82, 93, 97, 102, 50, 37, 124, 22, 105, 21, 116, 31, 19, 148,
95, 81, 61, 88, 43, 7, 40, 84, 2, 83, 70, 24, 94, 64, 66, 29, 62, 106, 127,
47, 26, 45, 53, 85, 28, 123, 63, 92, 76, 111, 59, 121, 135, 125, 132, 1,
104, 122, 107, 126, 16, 32, 36, 129, 18, 110, 41, 68, 79, 101, 65, 13, 73,
39, 145, 71, 15, 14, 8, 117, 144, 58, 52, 147, 136, 5, 23, 77, 27, 69, 96,
134, 91, 30, 49, 4, 89, 72, 11, 99, 75, 128, 87, 3, 131, 33, 42, 108, 9,
44, 149, 112, 90, 114, 140, 6, 118, 67, 54, 115, 20, 57, 137, 100, 133, 38,
141, 80, 56, 17, 109, 130, 34, 46, 74, 51, 119, 35, 113, 60, 98, 138, 25,
12, 139, 10, 48, 146, 55, 142, 78, 143, 103, 120, 86]
```

```
Total Computation Time: 735.5270221233368 seconds
```

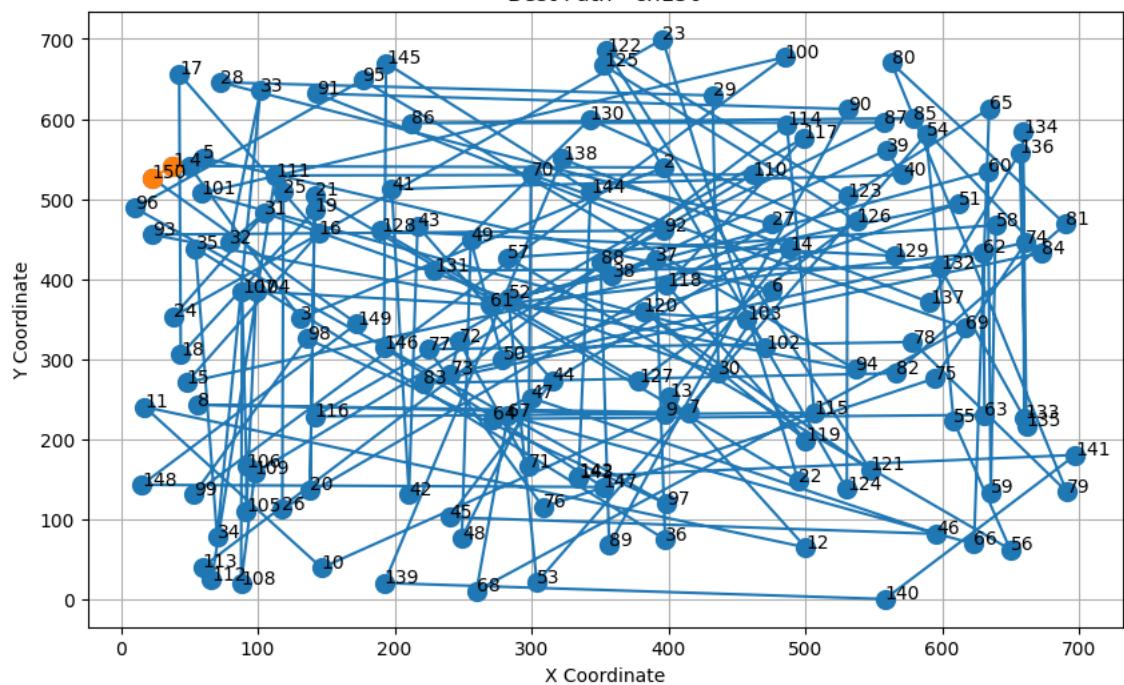
```
Average Computation Time per Iteration: 0.42365400314331053 seconds
```

```
Memory Usage: 180000 bytes
```

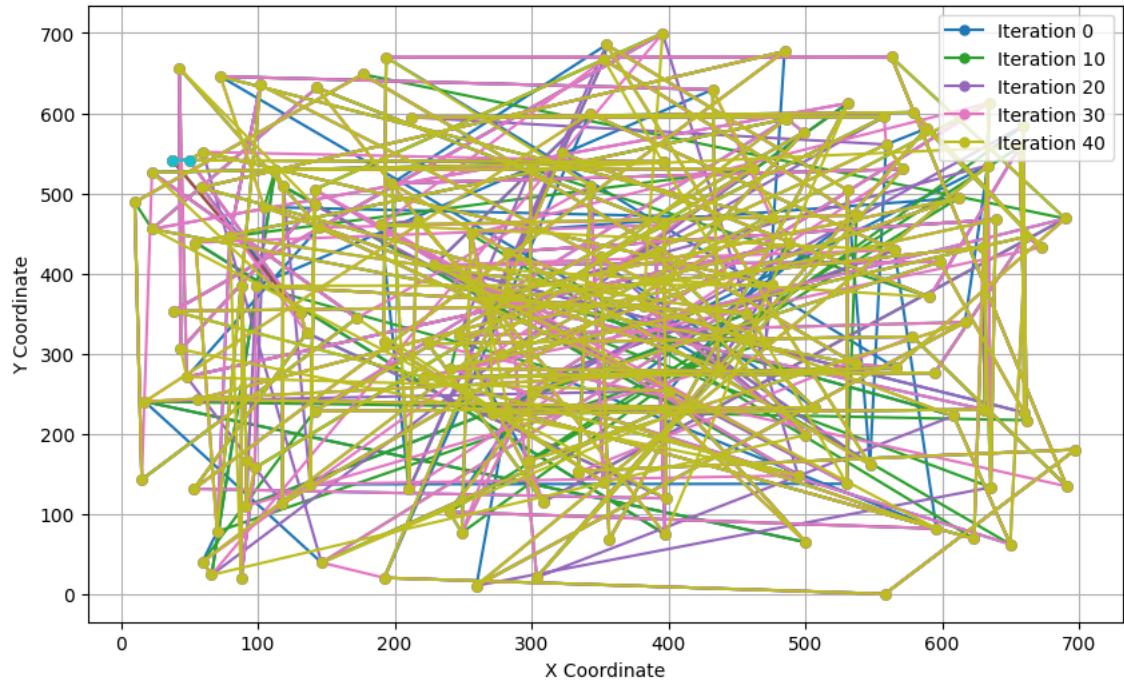
Best Fitness over Iterations - ch150



Best Path - ch150



Paths at Selected Iterations - ch150



Running simulation with dataset=ch150, decay_rate=0.01, k=0.05, m=2, epsilon=1e-10

Loaded coordinates for 150 cities from ch150.

Best Fitness: 207145.0943760468

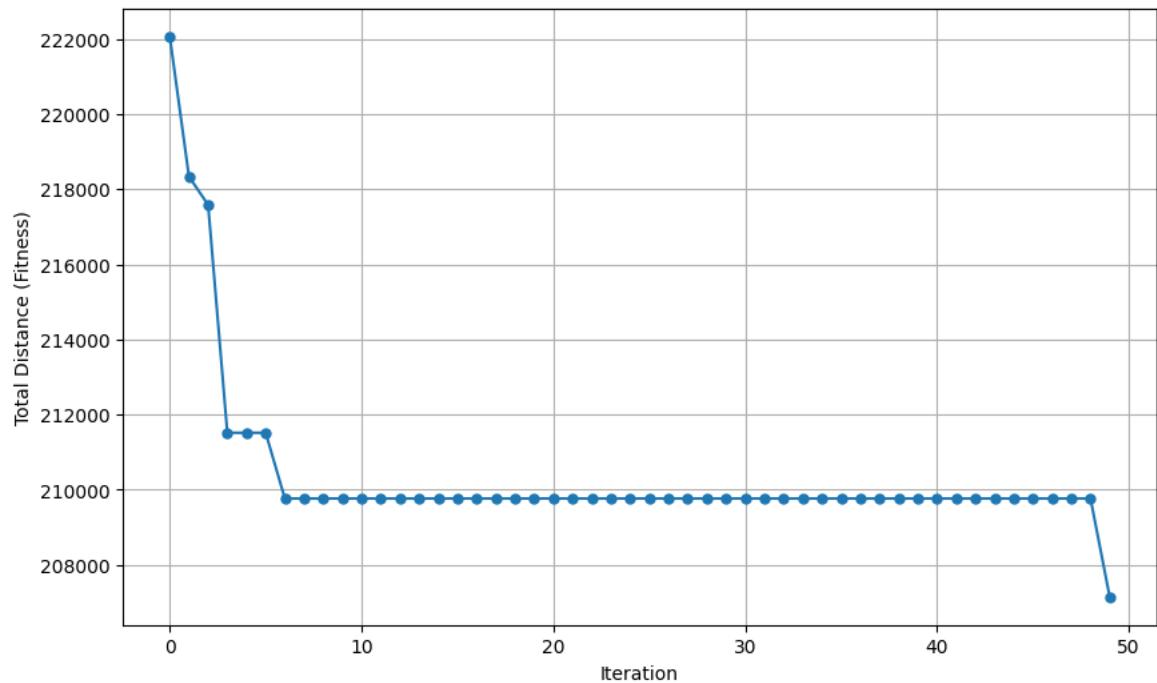
Best Path: [0, 93, 97, 102, 50, 37, 124, 22, 105, 21, 116, 31, 19, 148, 95, 130, 109, 17, 141, 38, 80, 56, 84, 2, 133, 100, 137, 57, 20, 115, 45, 26, 72, 89, 4, 47, 127, 54, 67, 118, 6, 83, 40, 7, 43, 61, 88, 81, 70, 24, 94, 64, 66, 29, 140, 114, 90, 112, 149, 44, 9, 108, 62, 106, 42, 33, 131, 3, 87, 128, 103, 75, 99, 11, 23, 77, 5, 147, 136, 142, 78, 143, 55, 48, 146, 52, 58, 144, 14, 117, 8, 16, 126, 122, 107, 27, 69, 96, 134, 91, 30, 49, 53, 85, 28, 123, 63, 111, 59, 76, 92, 34, 46, 74, 51, 60, 113, 35, 119, 121, 135, 125, 13, 65, 101, 79, 68, 110, 41, 132, 1, 104, 32, 36, 129, 18, 73, 39, 15, 71, 145, 98, 138, 25, 10, 139, 12, 120, 86, 82]

Total Computation Time: 757.2862887382507 seconds

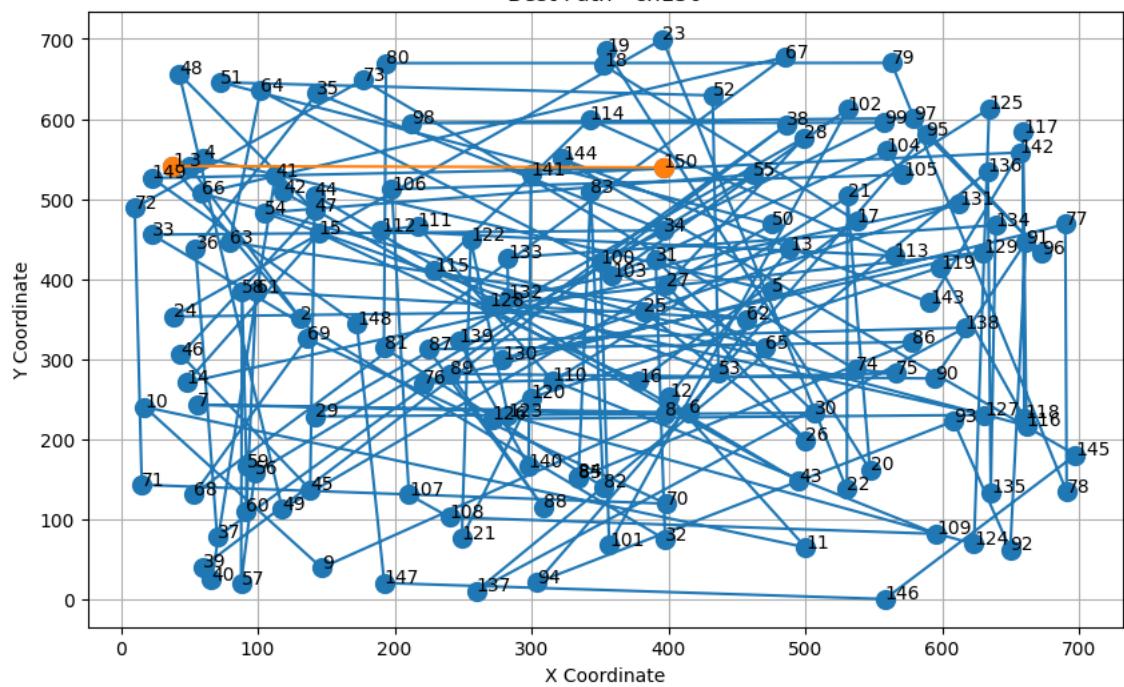
Average Computation Time per Iteration: 0.4322033452987671 seconds

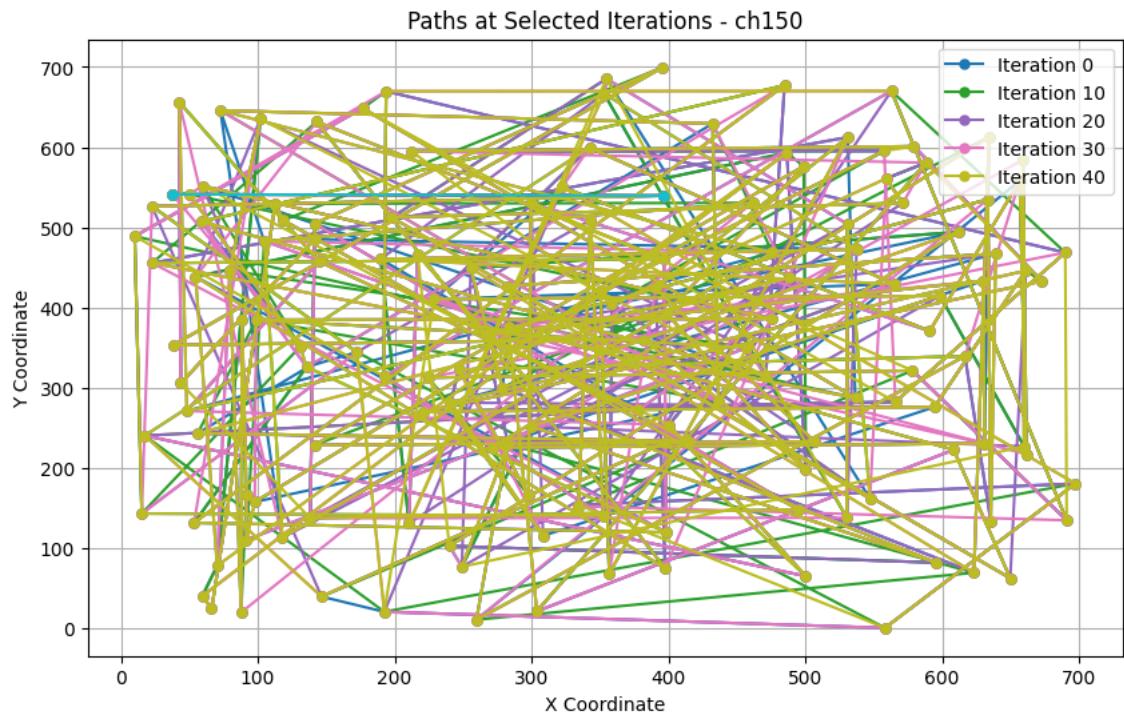
Memory Usage: 180000 bytes

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 203343.36369163654
```

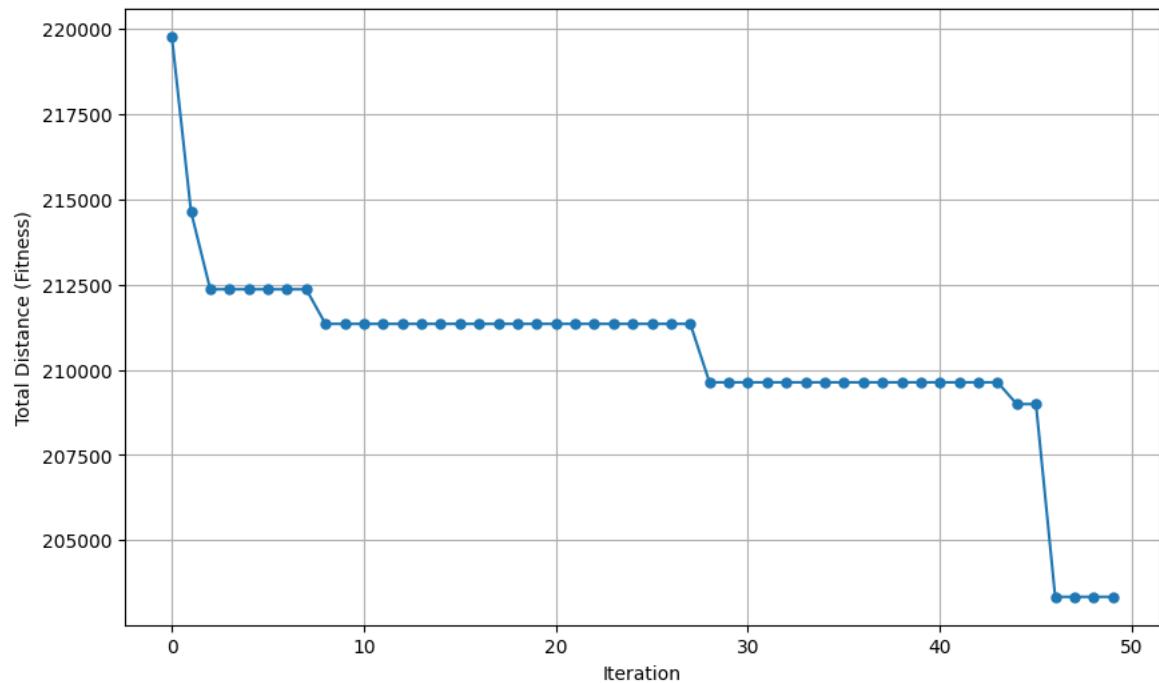
```
Best Path: [0, 93, 97, 102, 50, 9, 108, 44, 149, 112, 90, 114, 140, 6, 118,
127, 62, 106, 42, 33, 131, 3, 87, 128, 89, 47, 67, 54, 115, 20, 57, 137,
100, 133, 2, 84, 7, 43, 88, 81, 61, 40, 83, 70, 24, 94, 29, 66, 64, 37,
124, 19, 148, 95, 130, 31, 116, 22, 105, 21, 74, 46, 51, 60, 113, 35, 119,
135, 121, 59, 76, 92, 63, 17, 34, 109, 56, 80, 141, 38, 123, 28, 85, 107,
122, 126, 16, 104, 32, 36, 129, 18, 110, 41, 68, 79, 101, 65, 132, 1, 111,
125, 13, 73, 39, 15, 71, 145, 98, 138, 25, 12, 139, 10, 48, 146, 55, 143,
78, 142, 136, 23, 5, 147, 52, 58, 144, 14, 8, 117, 77, 27, 69, 96, 134, 53,
91, 30, 49, 45, 26, 4, 72, 11, 99, 75, 103, 120, 86, 82]
```

```
Total Computation Time: 738.8237268924713 seconds
```

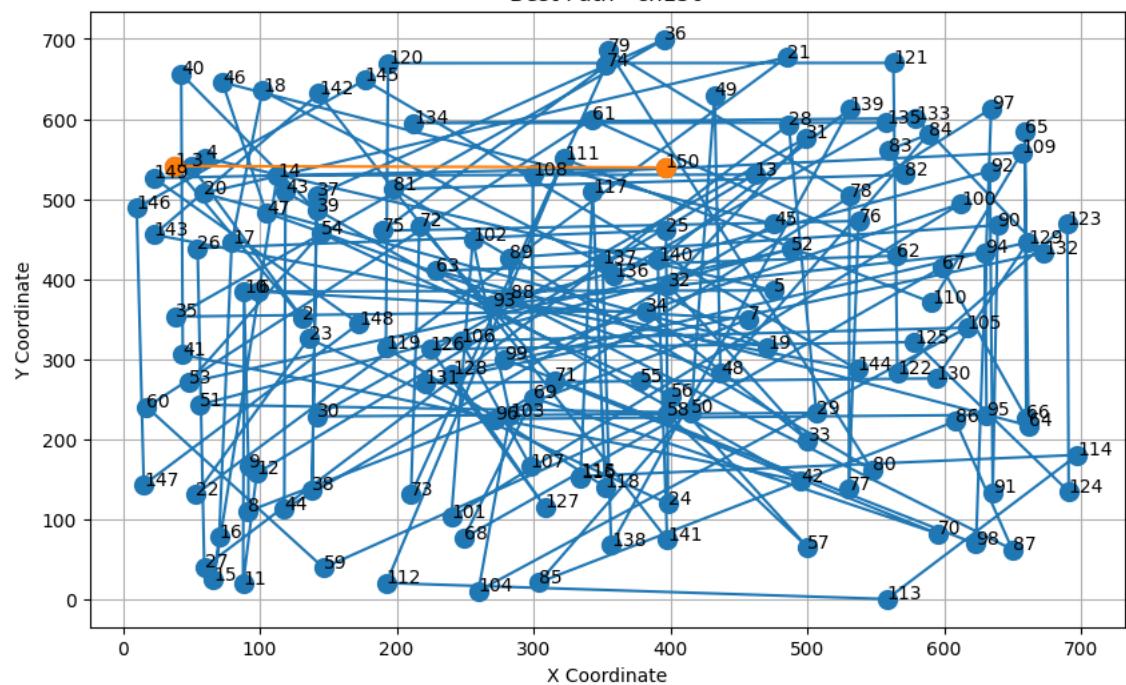
```
Average Computation Time per Iteration: 0.4410781526565552 seconds
```

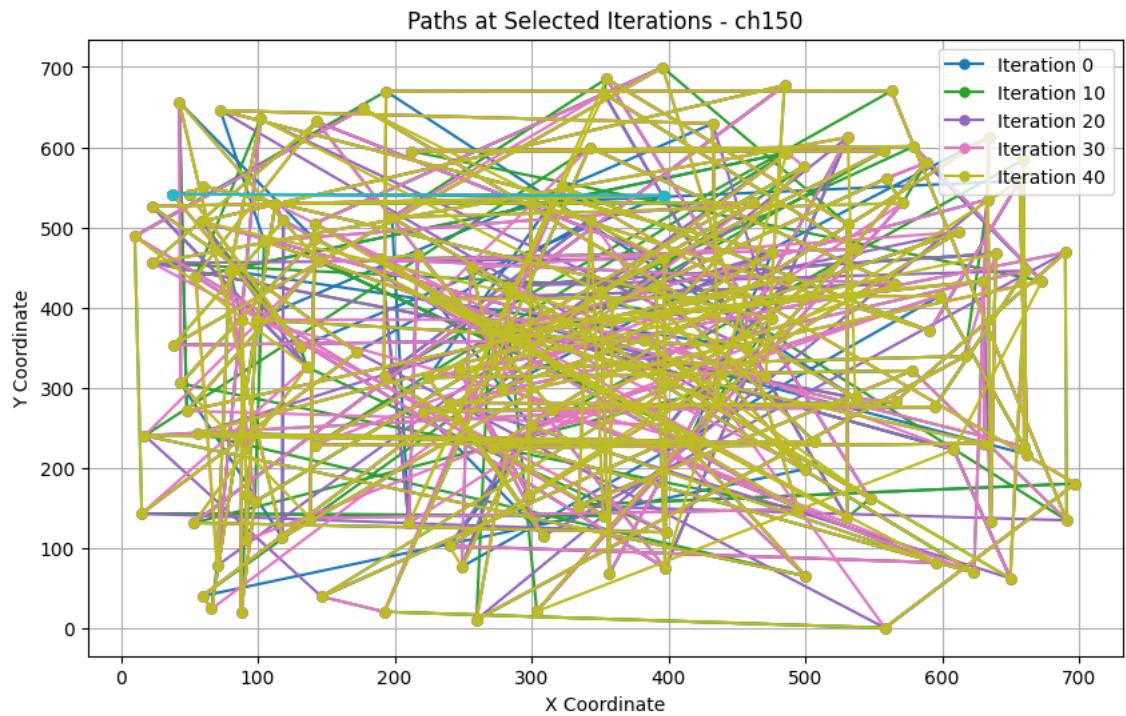
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.5, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 209950.78384972073
```

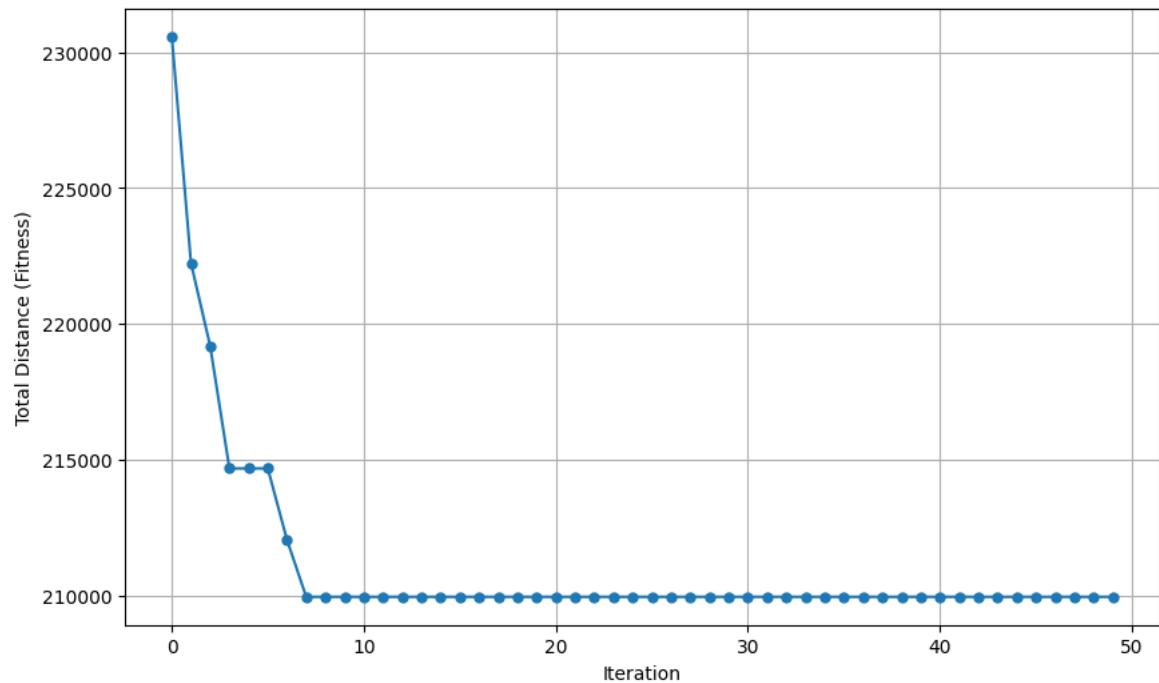
```
Best Path: [0, 82, 93, 87, 131, 3, 128, 89, 72, 4, 26, 54, 67, 118, 6, 83, 2, 84, 40, 7, 43, 61, 88, 81, 148, 24, 70, 95, 130, 34, 109, 17, 63, 92, 76, 59, 111, 135, 125, 13, 73, 129, 18, 79, 110, 41, 68, 101, 65, 132, 1, 104, 126, 122, 107, 85, 28, 123, 141, 56, 80, 38, 133, 100, 137, 57, 20, 115, 45, 49, 30, 91, 53, 134, 96, 69, 27, 77, 5, 23, 11, 99, 75, 103, 86, 120, 12, 139, 10, 48, 146, 55, 143, 78, 142, 136, 147, 52, 58, 144, 14, 117, 8, 16, 32, 36, 39, 15, 71, 145, 25, 138, 98, 60, 113, 35, 119, 121, 51, 46, 74, 21, 105, 22, 116, 31, 19, 124, 37, 64, 94, 66, 29, 140, 114, 90, 112, 149, 44, 9, 108, 62, 106, 127, 47, 42, 33, 50, 102, 97]
```

```
Total Computation Time: 681.3933634757996 seconds
```

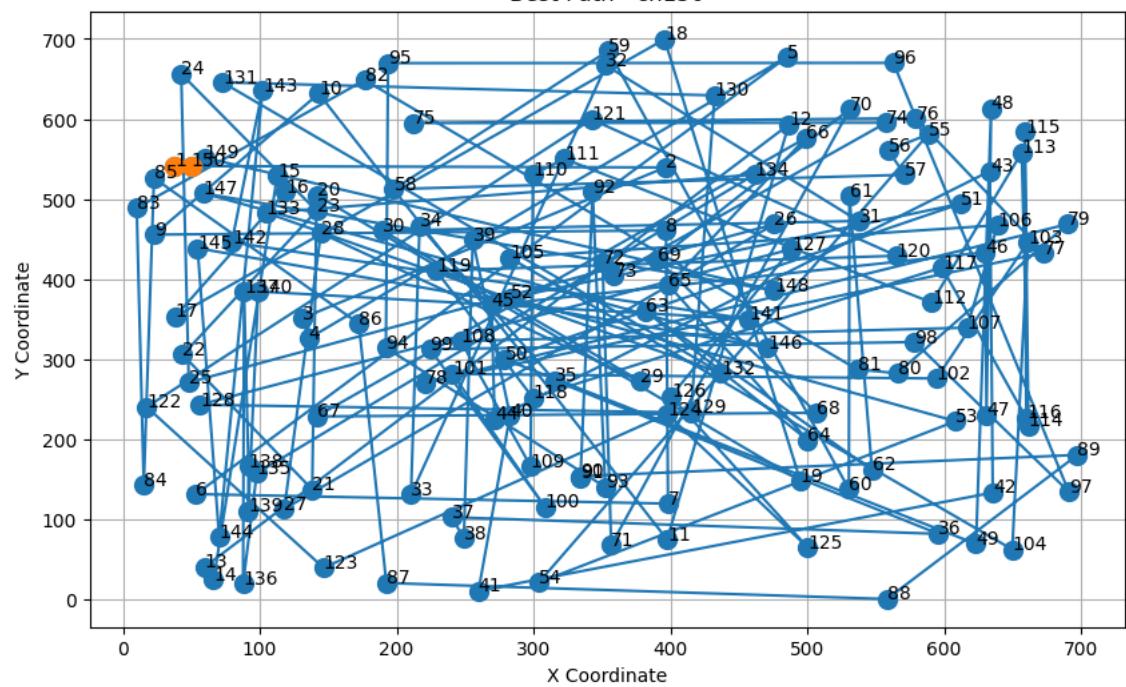
```
Average Computation Time per Iteration: 0.4963253211975098 seconds
```

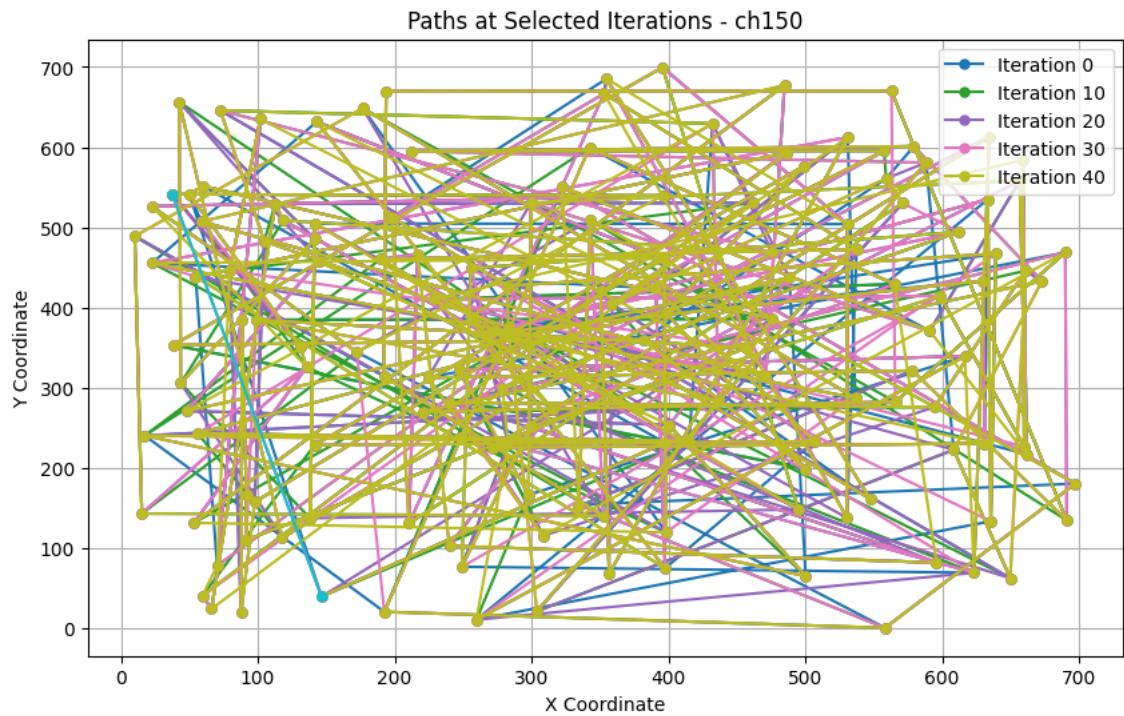
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=1,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 207183.88508354523
```

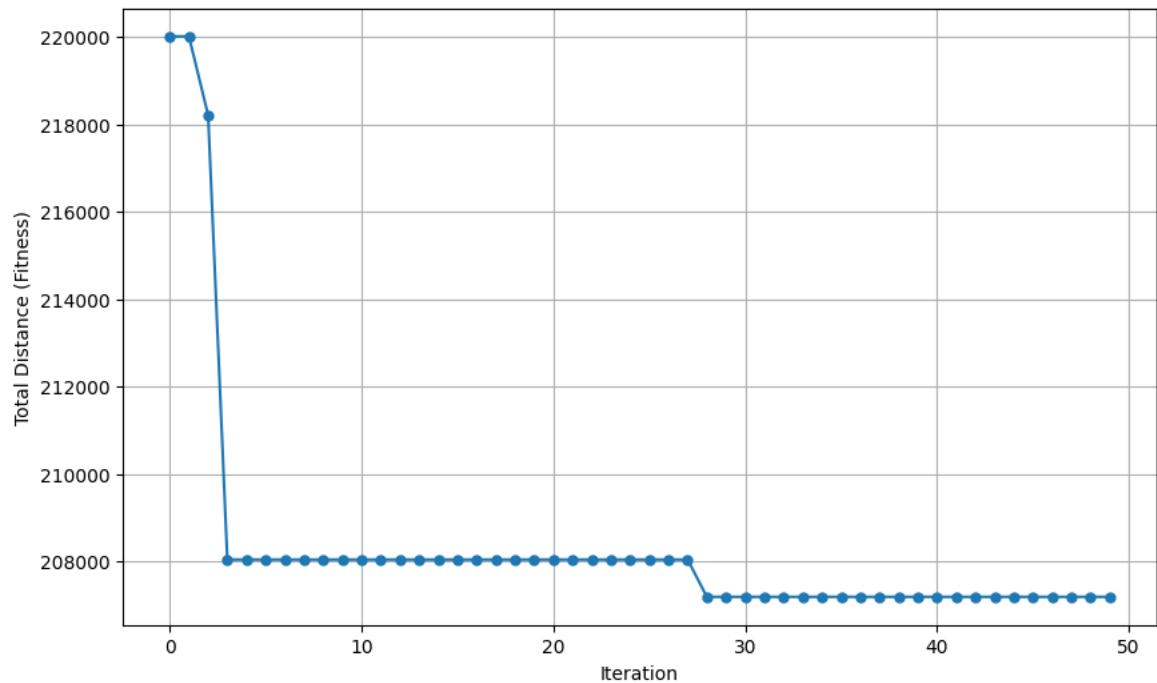
```
Best Path: [0, 82, 86, 120, 103, 143, 55, 146, 48, 10, 139, 12, 25, 138,
98, 60, 113, 35, 119, 51, 59, 121, 135, 111, 1, 125, 65, 13, 73, 39, 145,
71, 15, 36, 32, 129, 18, 110, 41, 68, 79, 101, 132, 104, 126, 16, 8, 14,
117, 77, 23, 5, 144, 58, 52, 147, 136, 142, 78, 75, 99, 11, 128, 87, 3,
131, 42, 106, 62, 127, 47, 54, 67, 118, 6, 83, 70, 24, 81, 61, 88, 43, 7,
40, 84, 2, 133, 100, 137, 57, 20, 115, 45, 26, 4, 89, 72, 49, 30, 91, 53,
134, 96, 69, 27, 107, 122, 85, 28, 123, 38, 141, 80, 56, 17, 63, 92, 76,
46, 74, 34, 109, 130, 95, 148, 19, 31, 116, 21, 105, 22, 37, 124, 64, 94,
66, 29, 140, 114, 90, 112, 149, 44, 108, 9, 50, 102, 33, 93, 97]
```

```
Total Computation Time: 717.0834467411041 seconds
```

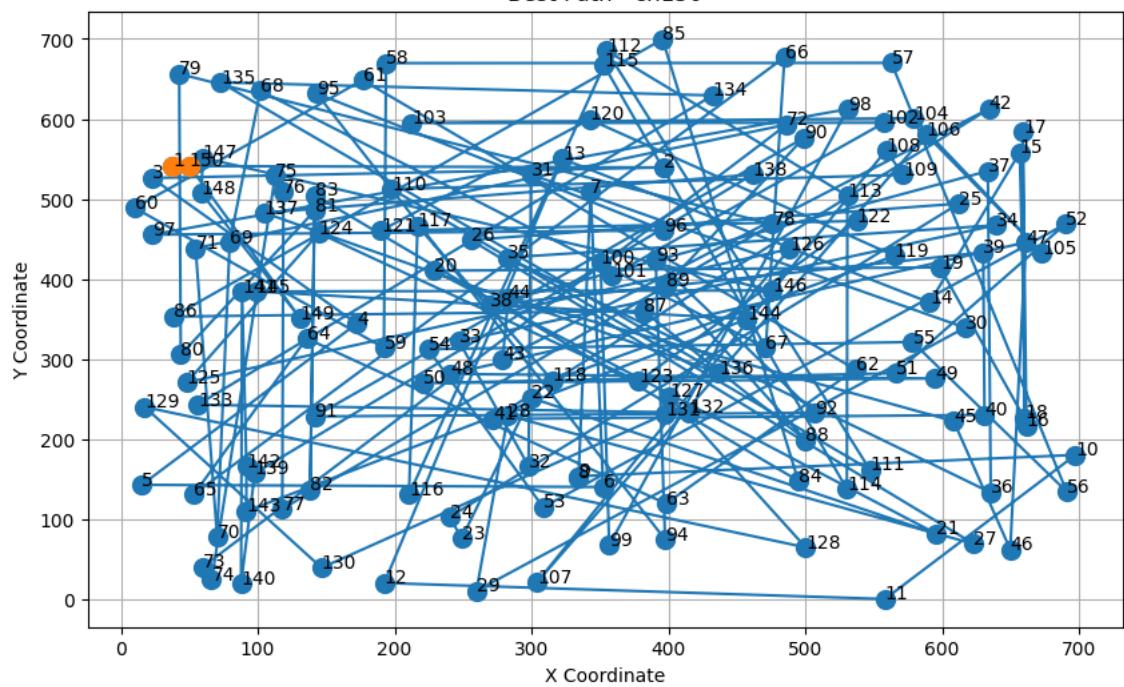
```
Average Computation Time per Iteration: 0.44092885971069334 seconds
```

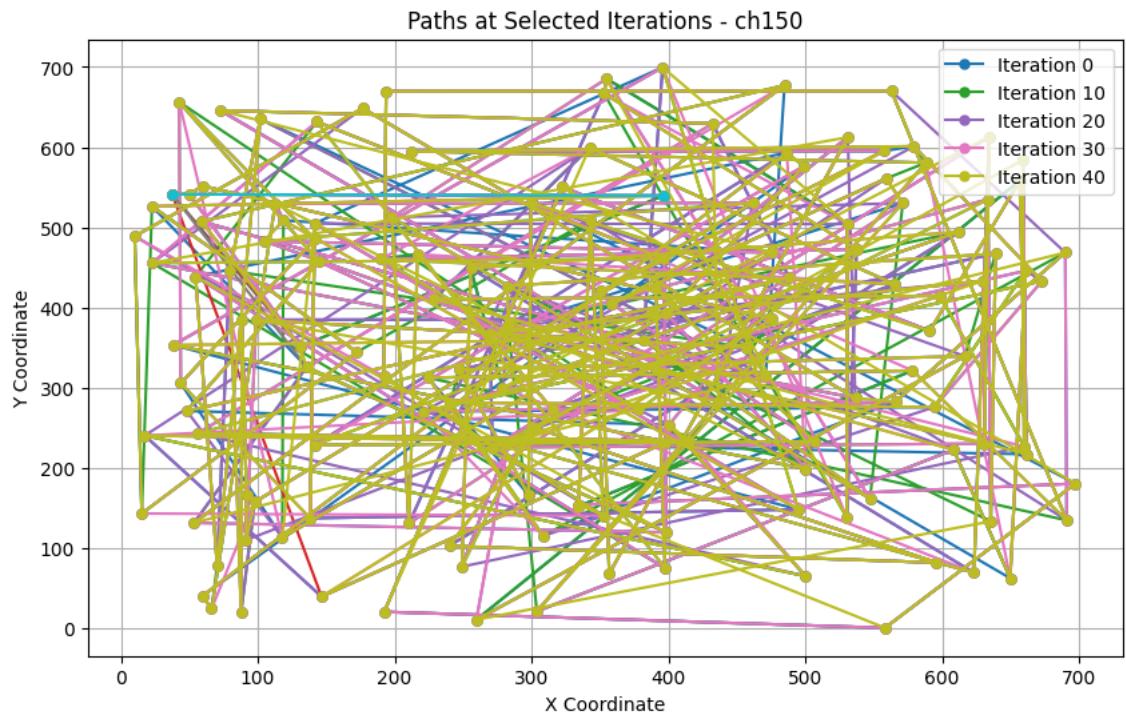
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 210193.79035789805
```

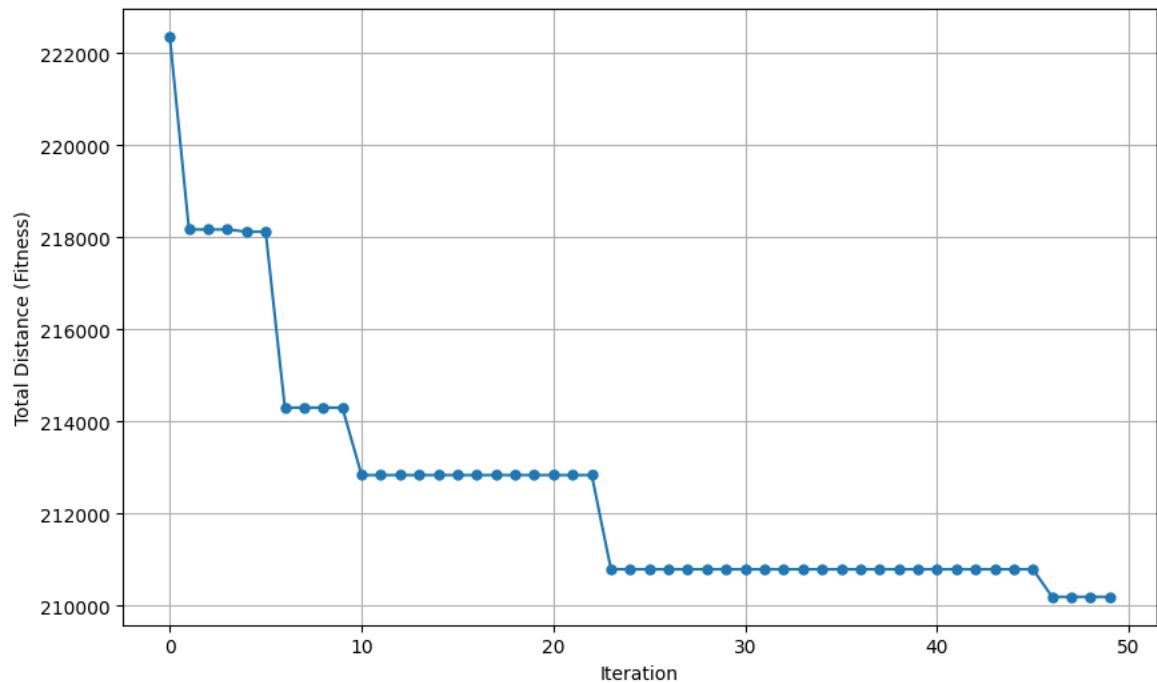
```
Best Path: [0, 97, 93, 87, 128, 3, 131, 33, 102, 50, 37, 124, 116, 31, 19,
148, 95, 130, 109, 34, 92, 76, 46, 74, 21, 22, 105, 12, 25, 139, 10, 138,
98, 60, 113, 35, 51, 119, 121, 59, 111, 135, 125, 132, 1, 104, 32, 36, 129,
18, 110, 41, 68, 79, 101, 65, 13, 73, 39, 145, 71, 15, 14, 16, 126, 122,
107, 69, 96, 134, 91, 30, 49, 53, 85, 28, 123, 63, 17, 56, 80, 141, 38,
133, 2, 84, 40, 7, 43, 88, 61, 81, 70, 24, 83, 6, 118, 140, 114, 29, 66,
94, 64, 9, 108, 44, 149, 90, 112, 62, 106, 42, 127, 47, 54, 67, 100, 137,
57, 20, 115, 45, 26, 4, 89, 72, 11, 99, 23, 5, 77, 27, 8, 117, 144, 58, 52,
48, 146, 147, 136, 142, 78, 55, 143, 75, 103, 120, 86, 82]
```

```
Total Computation Time: 719.2485628128052 seconds
```

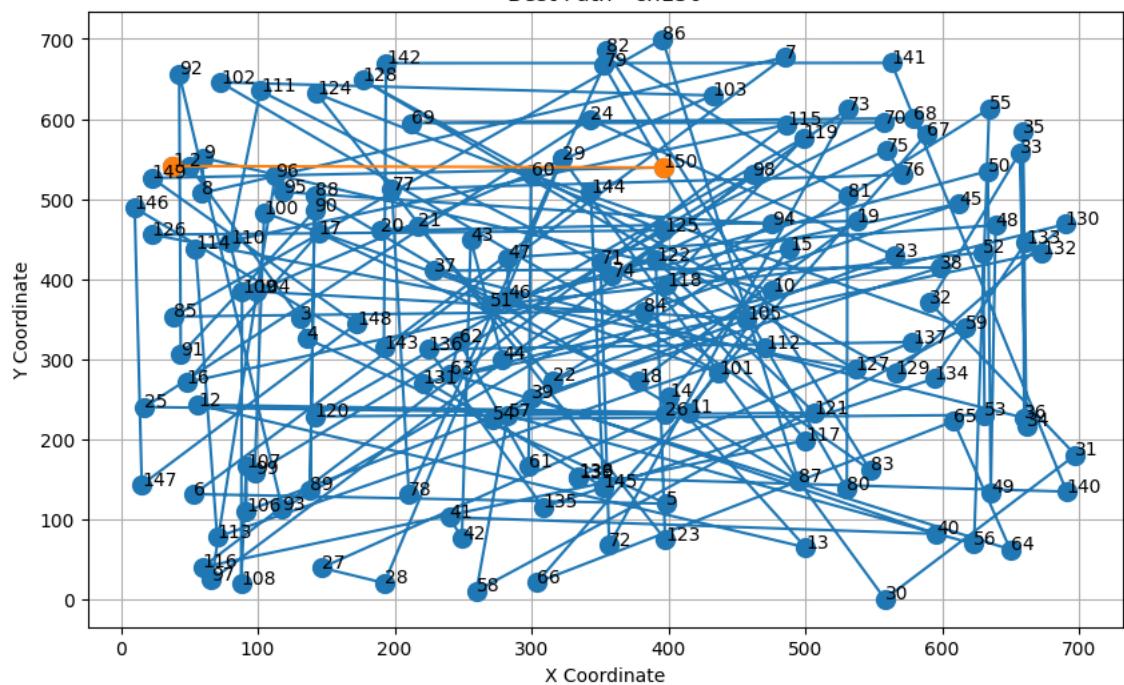
```
Average Computation Time per Iteration: 0.432718563079834 seconds
```

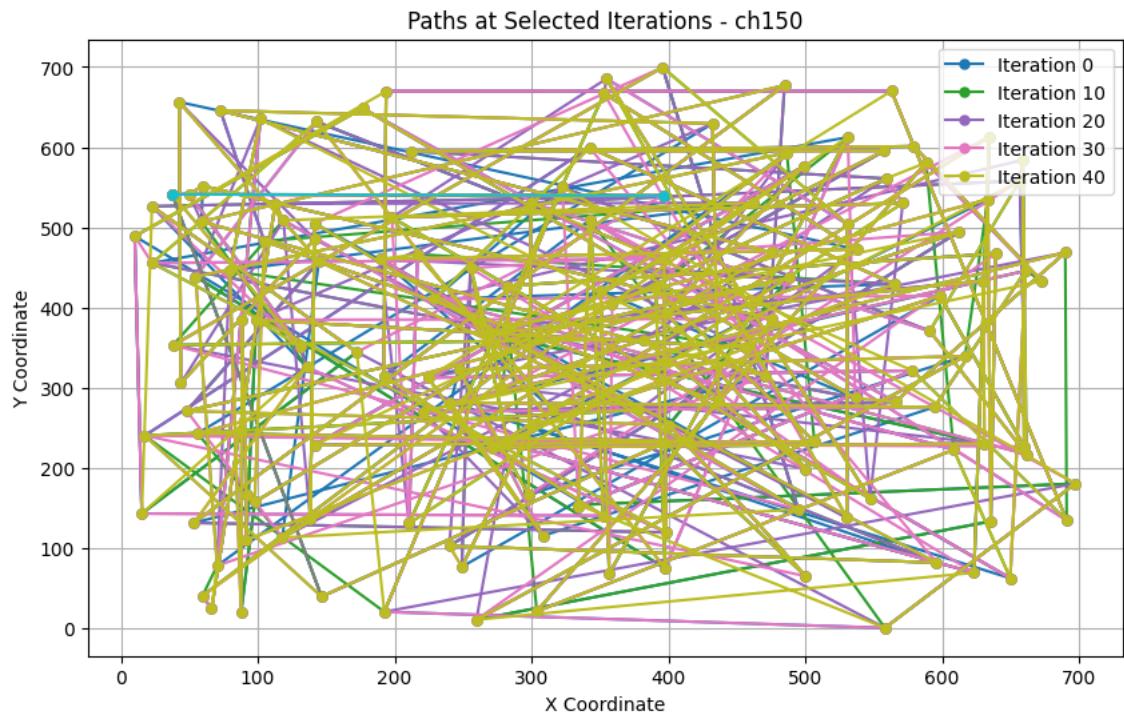
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=3,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 206636.6177448559
```

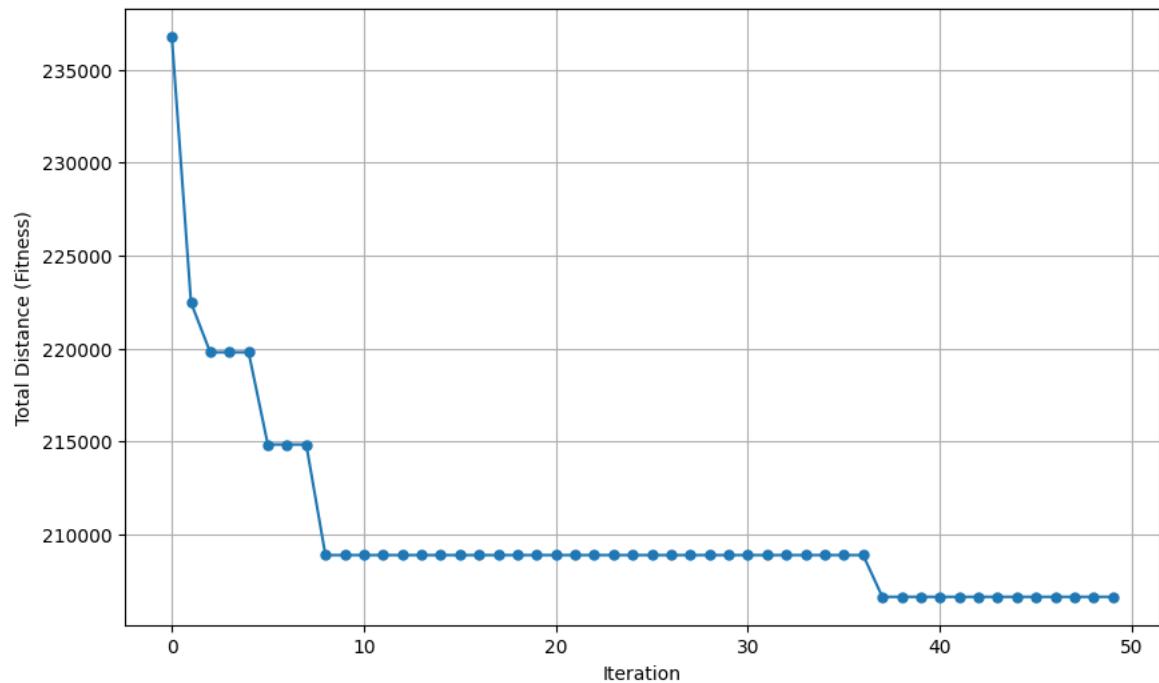
```
Best Path: [0, 82, 93, 33, 131, 3, 87, 128, 89, 72, 4, 26, 45, 115, 20, 57,
137, 100, 133, 2, 84, 7, 43, 40, 83, 6, 140, 118, 67, 54, 47, 127, 62, 106,
42, 108, 9, 44, 149, 112, 90, 114, 29, 66, 64, 94, 24, 70, 81, 88, 61, 56,
80, 38, 141, 17, 63, 123, 28, 85, 53, 49, 30, 91, 134, 96, 69, 27, 77, 5,
23, 11, 99, 75, 103, 86, 120, 146, 48, 55, 143, 78, 142, 136, 147, 52, 58,
144, 14, 117, 8, 16, 126, 107, 122, 104, 32, 36, 129, 39, 15, 71, 145, 138,
25, 10, 139, 12, 21, 74, 46, 51, 119, 35, 113, 60, 98, 73, 13, 65, 101, 18,
79, 68, 110, 41, 132, 1, 125, 135, 121, 59, 111, 76, 92, 34, 109, 130, 95,
148, 31, 116, 22, 105, 19, 124, 37, 50, 102, 97]
```

```
Total Computation Time: 722.9071550369263 seconds
```

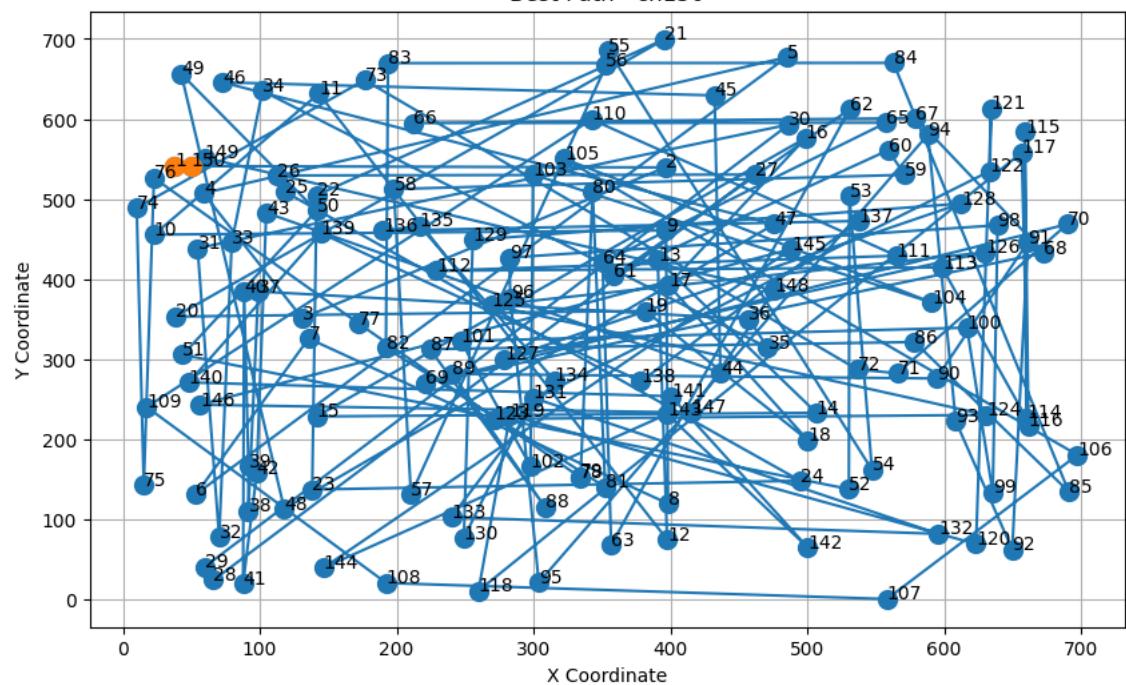
```
Average Computation Time per Iteration: 0.44558494091033934 seconds
```

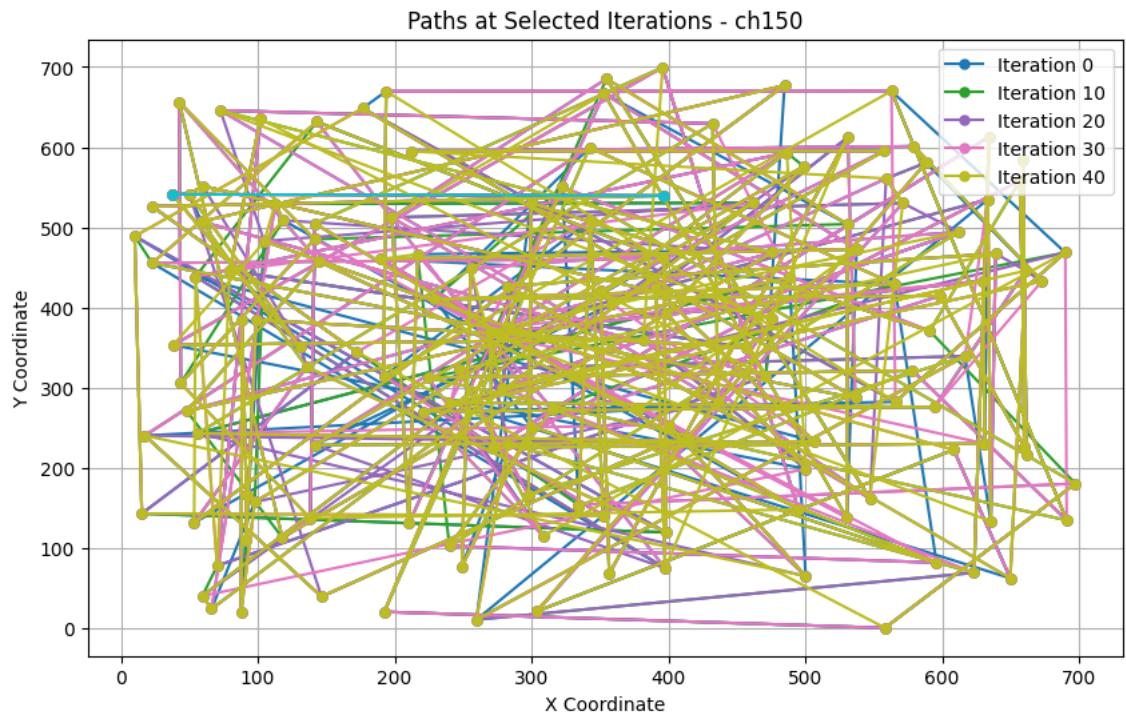
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=4,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 208860.16932372336
```

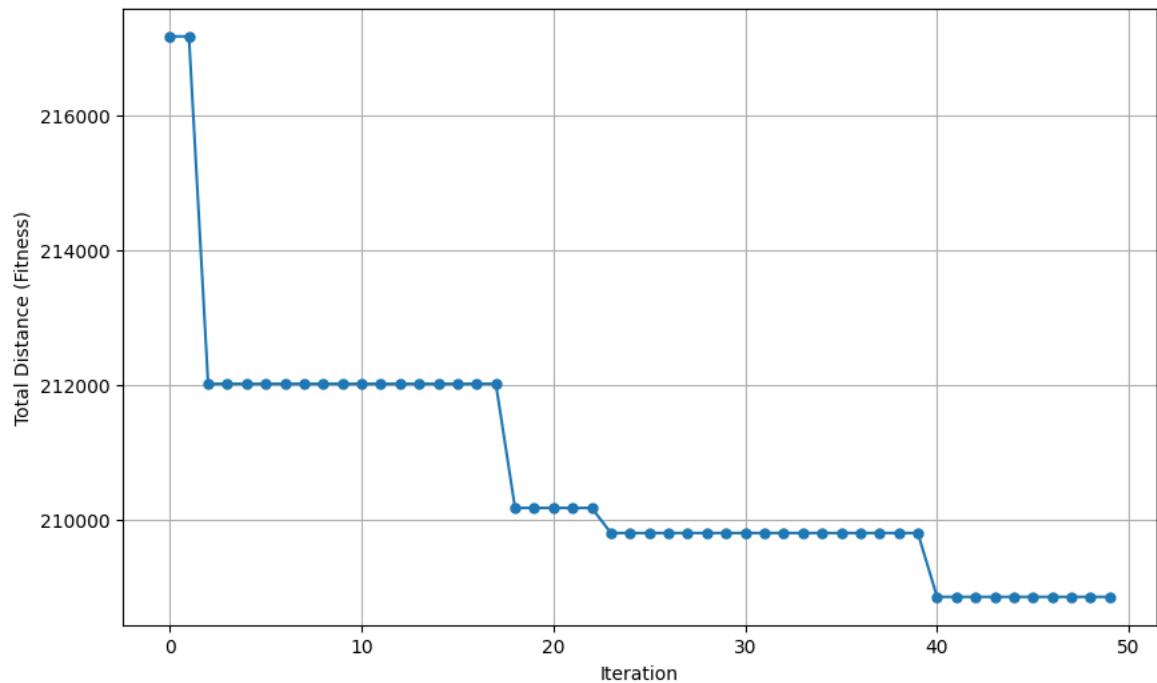
```
Best Path: [0, 105, 22, 116, 31, 21, 130, 34, 17, 63, 92, 111, 1, 132, 125,
65, 101, 41, 110, 68, 79, 18, 129, 36, 32, 104, 122, 126, 16, 14, 117, 8,
27, 77, 23, 5, 136, 147, 52, 58, 144, 15, 39, 73, 13, 135, 121, 59, 76, 46,
74, 51, 119, 35, 113, 60, 98, 71, 145, 138, 25, 12, 139, 10, 48, 146, 55,
142, 78, 143, 120, 86, 103, 75, 99, 11, 72, 49, 30, 91, 53, 134, 96, 69,
107, 85, 28, 123, 38, 141, 80, 56, 109, 95, 148, 19, 124, 37, 64, 94, 66,
29, 140, 114, 90, 112, 149, 44, 9, 108, 62, 106, 127, 47, 54, 67, 118, 6,
83, 24, 70, 81, 88, 61, 43, 7, 40, 84, 2, 133, 100, 137, 57, 20, 115, 45,
26, 4, 89, 128, 87, 3, 131, 33, 42, 50, 102, 97, 93, 82]
```

```
Total Computation Time: 707.7245116233826 seconds
```

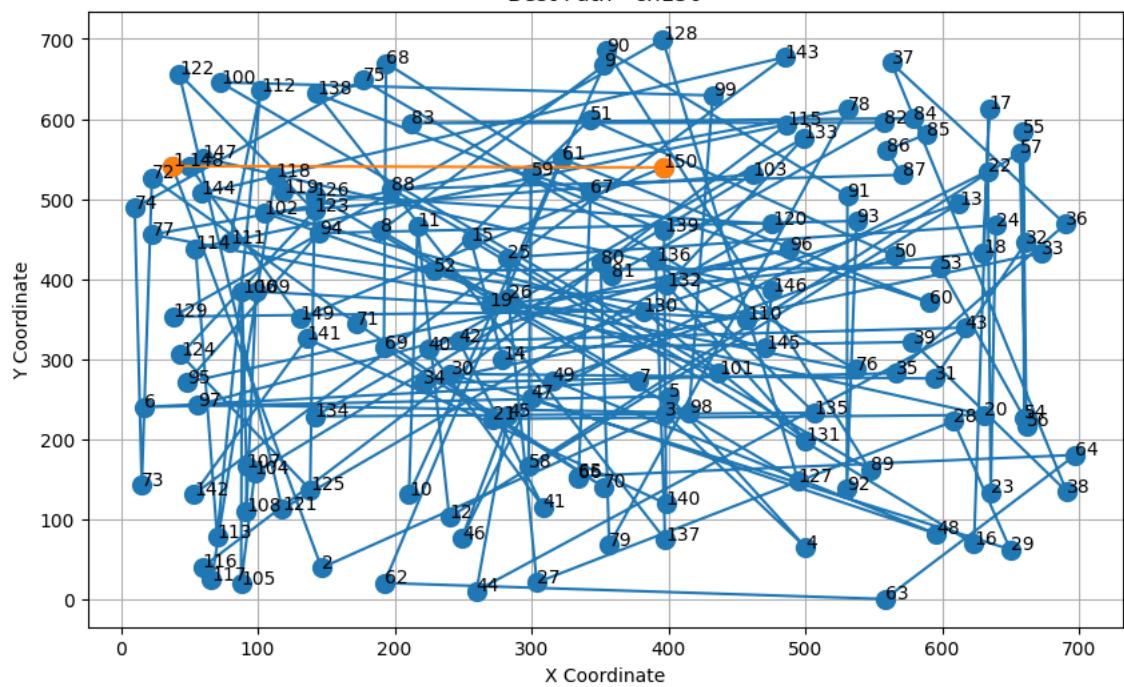
```
Average Computation Time per Iteration: 0.46058093070983885 seconds
```

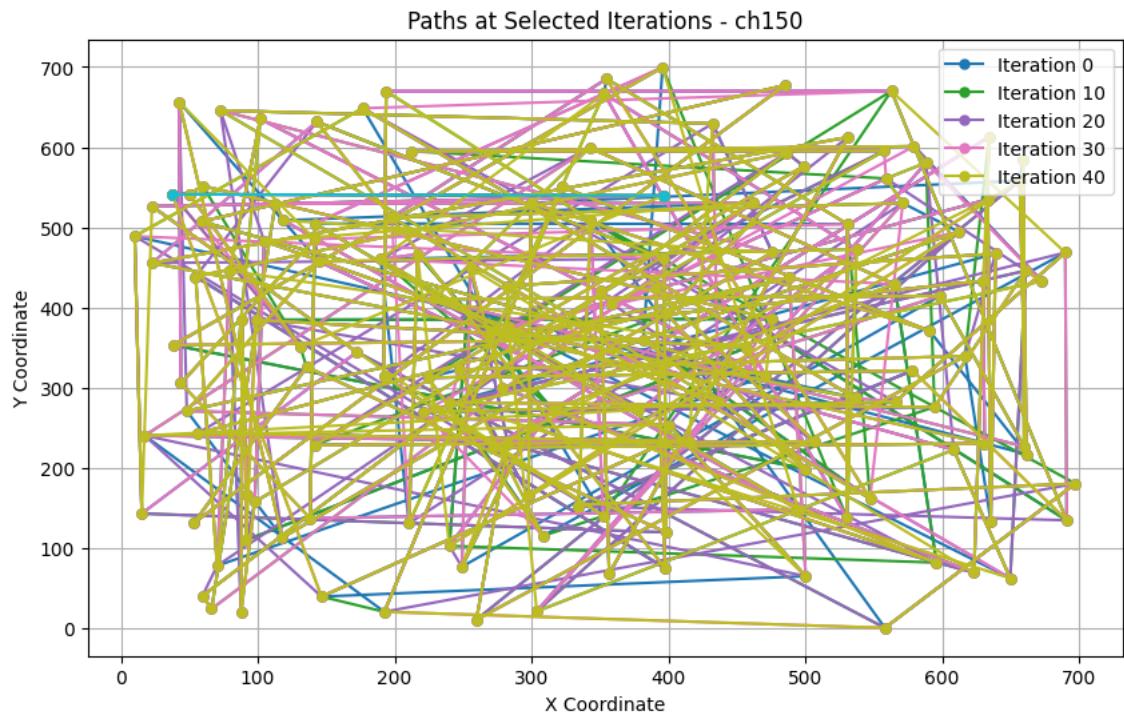
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-10
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 204809.77034299026
```

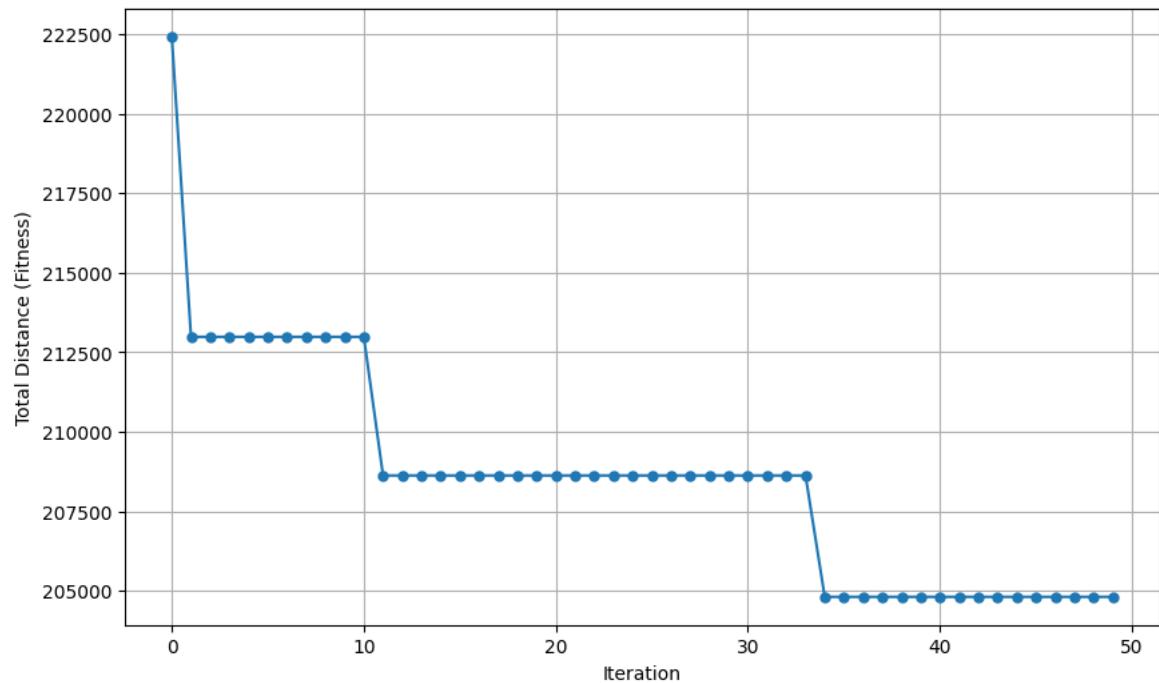
```
Best Path: [0, 93, 97, 102, 50, 37, 22, 105, 21, 74, 46, 34, 109, 130, 95,
148, 19, 31, 116, 124, 64, 66, 29, 94, 24, 70, 83, 6, 118, 67, 54, 47, 127,
106, 62, 140, 114, 149, 90, 112, 44, 9, 108, 42, 33, 131, 3, 87, 128, 103,
75, 99, 11, 23, 5, 147, 136, 142, 78, 143, 55, 48, 146, 52, 58, 144, 15,
14, 8, 117, 77, 27, 69, 96, 107, 122, 28, 85, 53, 134, 91, 30, 49, 72, 89,
4, 26, 45, 115, 20, 57, 137, 100, 133, 2, 84, 40, 7, 43, 61, 81, 88, 56,
80, 38, 123, 141, 17, 63, 92, 76, 111, 59, 121, 119, 51, 35, 113, 60, 98,
73, 13, 135, 125, 132, 1, 104, 126, 16, 32, 36, 129, 110, 41, 68, 79, 101,
65, 18, 39, 71, 145, 138, 25, 10, 139, 12, 120, 86, 82]
```

```
Total Computation Time: 695.760922908783 seconds
```

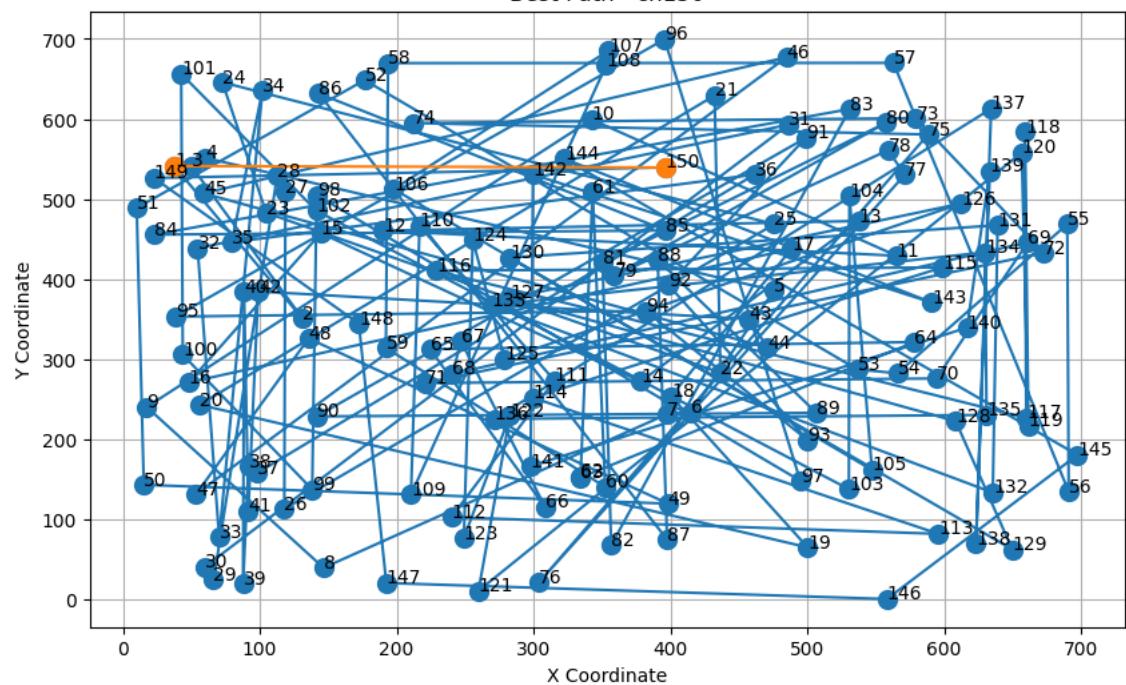
```
Average Computation Time per Iteration: 0.4479316520690918 seconds
```

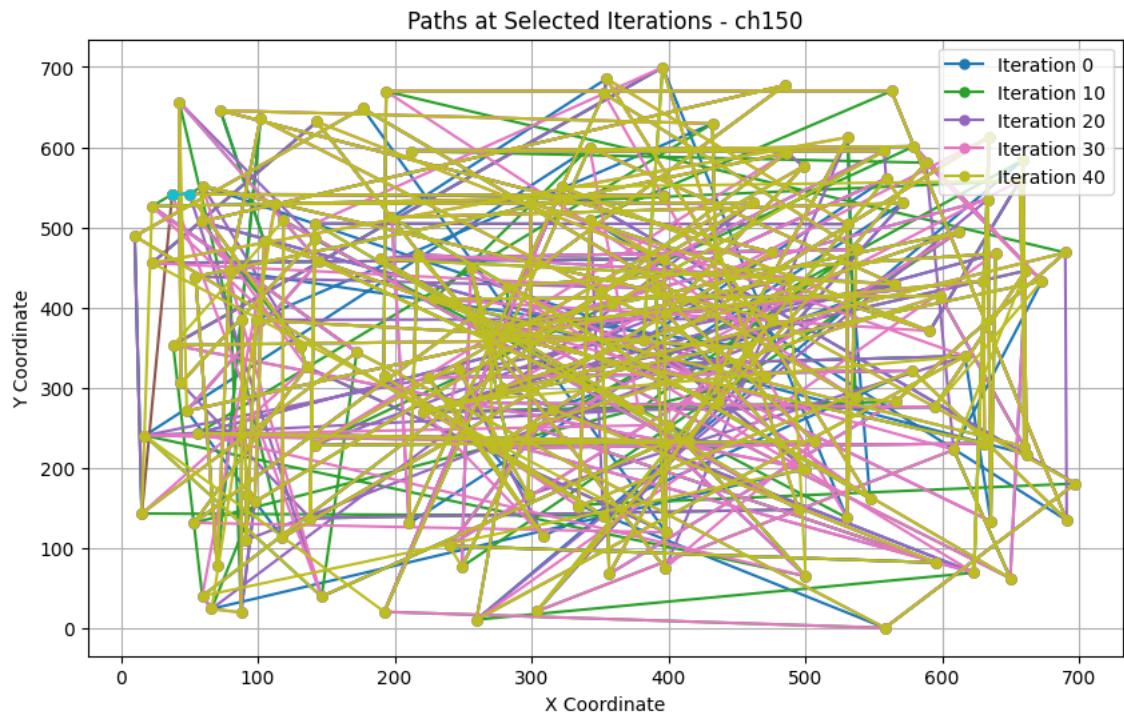
```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-08
```

```
Loaded coordinates for 150 cities from ch150.
```

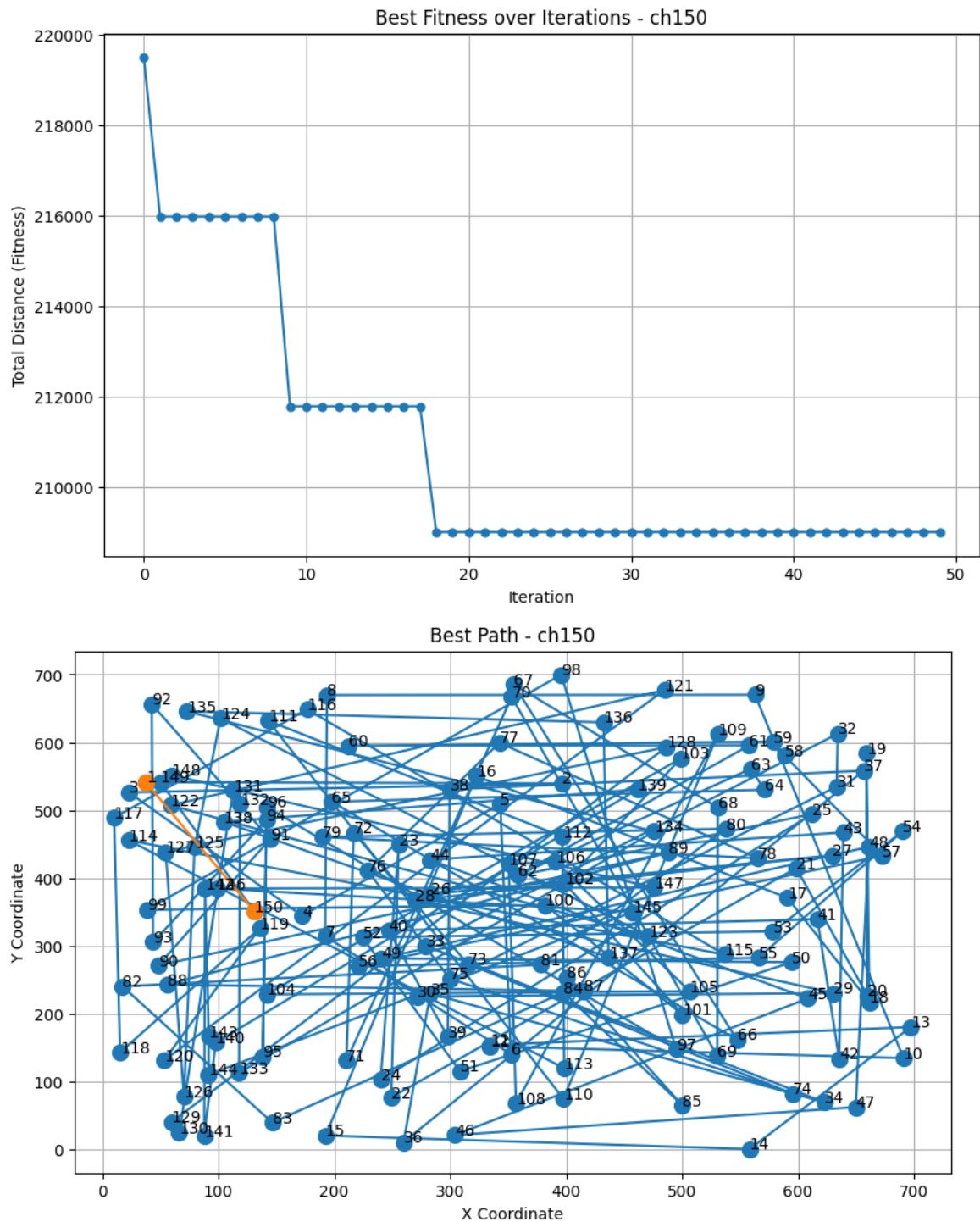
```
Best Fitness: 209010.02708148316
```

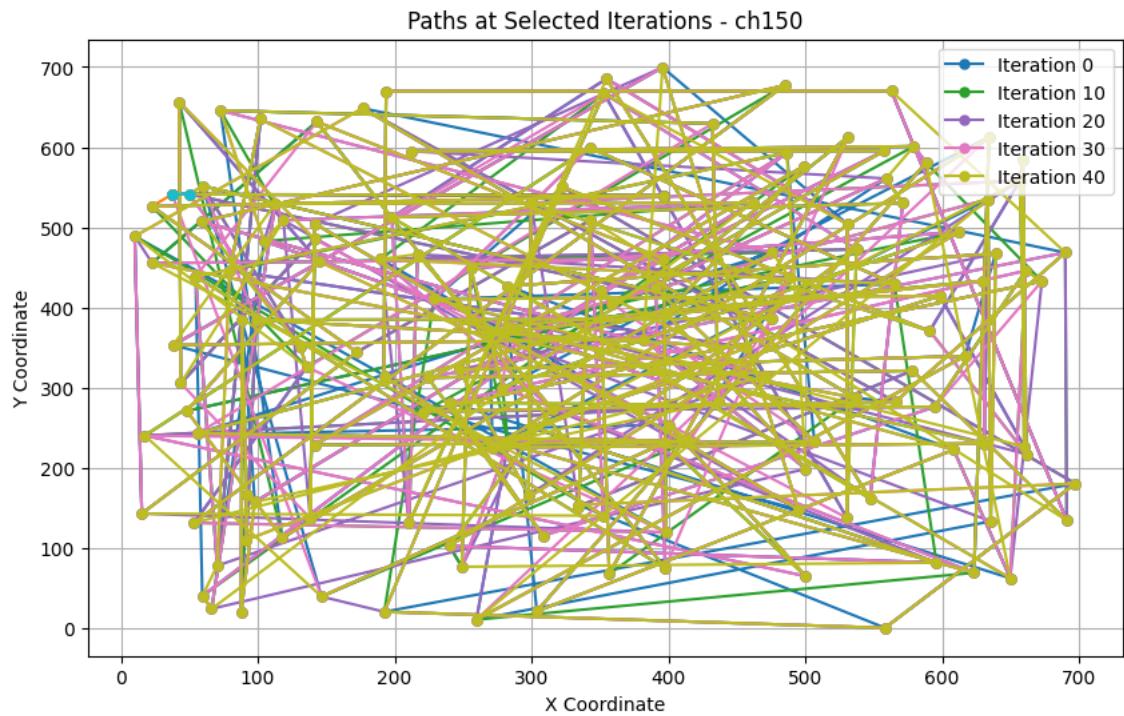
```
Best Path: [0, 82, 86, 120, 55, 143, 78, 142, 136, 147, 146, 48, 10, 139,
12, 25, 138, 60, 113, 35, 119, 135, 125, 111, 1, 104, 41, 110, 68, 79, 18,
101, 132, 65, 13, 73, 98, 145, 71, 15, 39, 129, 36, 32, 126, 122, 16, 8,
14, 117, 144, 58, 52, 5, 23, 77, 27, 107, 69, 96, 134, 53, 85, 28, 123, 38,
141, 80, 56, 17, 63, 92, 76, 59, 121, 51, 74, 46, 34, 109, 130, 21, 105,
22, 116, 31, 37, 124, 19, 148, 95, 81, 61, 88, 43, 7, 40, 84, 2, 133, 100,
137, 57, 20, 115, 45, 91, 30, 49, 26, 4, 89, 128, 72, 11, 99, 75, 103, 87,
3, 131, 33, 42, 106, 62, 127, 47, 54, 67, 118, 6, 83, 70, 24, 94, 64, 66,
29, 140, 114, 90, 112, 149, 44, 108, 9, 50, 102, 97, 93]
```

```
Total Computation Time: 679.5996220111847 seconds
```

```
Average Computation Time per Iteration: 0.4232445001602173 seconds
```

```
Memory Usage: 180000 bytes
```





```
Running simulation with dataset=ch150, decay_rate=0.01, k=0.1, m=2,
epsilon=1e-06
```

```
Loaded coordinates for 150 cities from ch150.
```

```
Best Fitness: 208693.89176103138
```

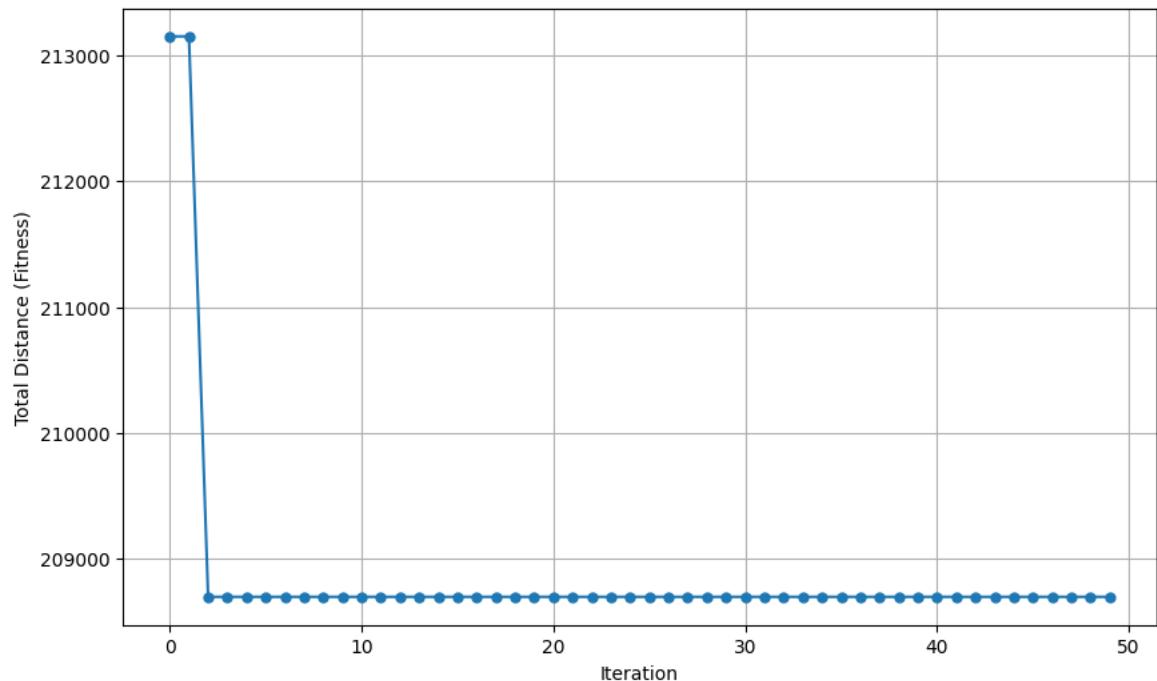
```
Best Path: [0, 82, 86, 120, 55, 146, 48, 139, 10, 25, 138, 145, 71, 98, 60,
51, 119, 35, 113, 135, 121, 59, 111, 1, 104, 126, 16, 32, 36, 129, 18, 110,
41, 68, 79, 101, 65, 132, 125, 13, 73, 39, 15, 14, 8, 117, 77, 23, 5, 144,
58, 52, 147, 136, 142, 78, 143, 75, 103, 87, 93, 33, 42, 131, 3, 128, 89,
4, 72, 99, 11, 49, 30, 91, 53, 134, 96, 69, 27, 107, 122, 85, 28, 63, 92,
76, 46, 74, 12, 21, 105, 22, 116, 31, 37, 124, 19, 148, 70, 24, 94, 64, 66,
29, 114, 140, 6, 83, 2, 84, 40, 7, 43, 88, 61, 81, 95, 130, 34, 109, 17,
56, 80, 141, 123, 38, 133, 100, 137, 57, 20, 115, 45, 26, 47, 54, 67, 118,
127, 106, 62, 90, 112, 149, 44, 108, 9, 50, 102, 97]
```

```
Total Computation Time: 691.7568786144257 seconds
```

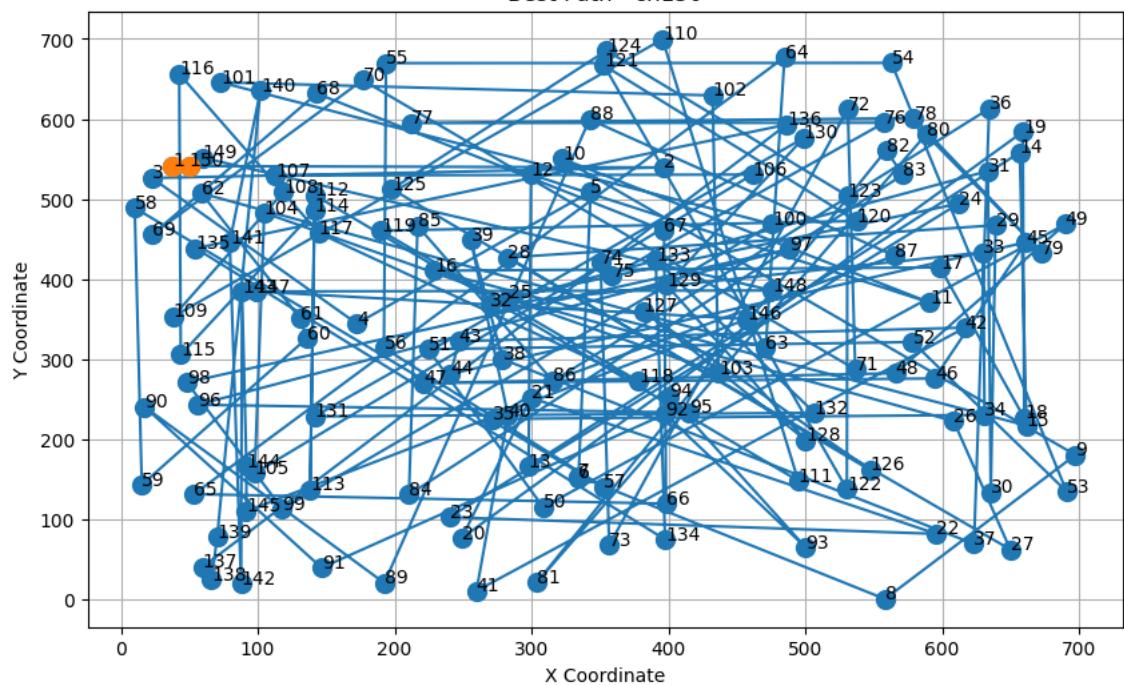
```
Average Computation Time per Iteration: 0.41699676513671874 seconds
```

```
Memory Usage: 180000 bytes
```

Best Fitness over Iterations - ch150



Best Path - ch150



Paths at Selected Iterations - ch150

