

## Programing Assignment #3

CSCE 625 - Artificial Intelligence  
Spring 2015

Name: Xiaoshu Zhang

Email: kallen5208@gmail.com

### 1. Global settings

This took 100,000 iterations, with a temperature schedule that started at 60 and decreased linearly to 0.

### 2. Initial state

This work starts the search with a random tour as the initial state.

For one test, the initial state is shown in Figure 1, length is 15323.0 miles, detailed path is:

*Sanderson Palacios Hondo ElPaso Kingsville Stephenville BigSpring Wichita MineralWells Dalhart Waco Childress Amarillo Dallas Rockport Abilene Laredo Greenville Sherman Killeen Guadalupe ChaseNAS Marfa FortWorth Midland CorpusChristi Plainview Alice Victoria Junction BigSky Galveston Lubbock DelRio Harlingen Mcallen Brownsville Houston Paris PortArthur SanAntonio Wink Tyler Austin Longview CollegeStation Cotulla Hooks Temple Kerrville Brownwood SanAngelo Lufkin.*

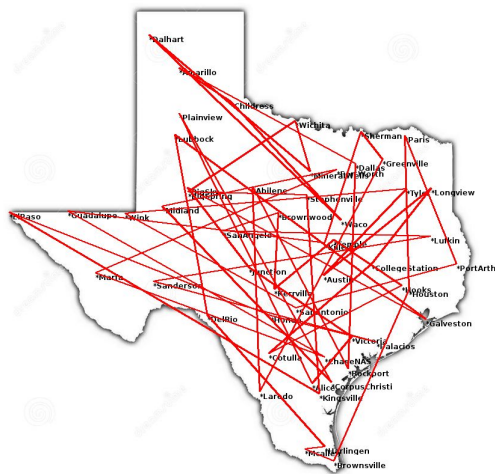


Figure 1 Initial state

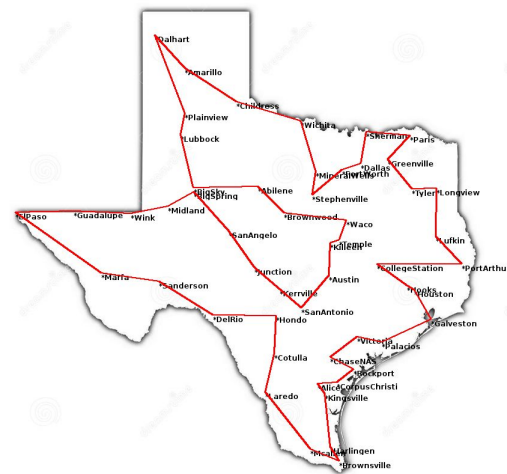


Figure 2 Final state

### 3. Final state

The final state in this test is shown in Figure 2, length is 3673.6 miles, detailed path is:

*Greenville Paris Sherman Dallas FortWorth Stephenville MineralWells Wichita Childress Amarillo Dalhart Plainview Lubbock BigSky Abilene Brownwood Waco Temple Killeen Austin SanAntonio Kerrville Junction SanAngelo BigSpring Midland Wink Guadalupe ElPaso Marfa Sanderson DelRio Hondo Cotulla Laredo Mcallen Brownsville Harlingen Kingsville Alice*

*CorpusChristi Rockport ChaseNAS Victoria Palacios Galveston Houston Hooks CollegeStation  
PortArthur Lufkin Longview Tyler.*

#### 4. Plot of the tour length

Profile showing how quality of solution (tour length) decreased over 100,000 iterations, converging at a tour of length 3673.6 miles using a starting temperature of 60 is shown in Figure 3.

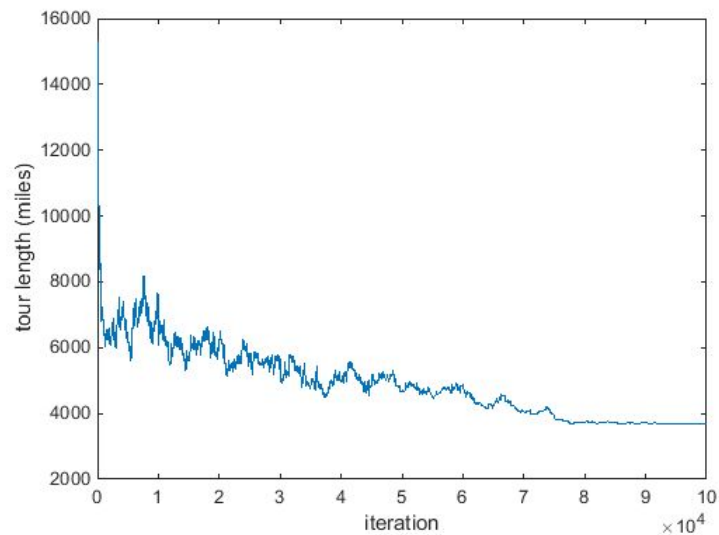


Figure 3. Plot of the tour length

----- There are appendixes in the next pages. -----

## Appendix A: Parts of tracing information

TSP 100000 60

initial state, tour length=15323.0 miles

Sanderson Palacios Hondo ElPaso Kingsville Stephenville BigSpring Wichita MineralWells  
Dalhart Waco Childress Amarillo Dallas Rockport Abilene Laredo Greenville Sherman Killeen  
Guadalupe ChaseNAS Marfa FortWorth Midland CorpusChristi Plainview Alice Victoria Junction  
BigSky Galveston Lubbock DelRio Harlingen Mcallen Brownsville Houston Paris PortArthur  
SanAntonio Wink Tyler Austin Longview CollegeStation Cotulla Hooks Temple Kerrville  
Brownwood SanAngelo Lufkin

iter=0 len=15323.0 newlen=15540.8 delta=217.8 temp=60.0000 p<0.0265

iter=1 len=15323.0 newlen=14993.8 delta=-329.2 temp=59.9994 p<241.2669

update! len=14993.8

Sanderson Palacios Hondo ElPaso Kingsville Stephenville BigSpring Wichita MineralWells  
Dalhart Waco Childress Amarillo Dallas Rockport Abilene Laredo Greenville Sherman Killeen  
Guadalupe ChaseNAS Marfa FortWorth Midland CorpusChristi Plainview Alice Victoria Junction  
BigSky Temple Lubbock DelRio Harlingen Mcallen Brownsville Houston Paris PortArthur  
SanAntonio Wink Tyler Austin Longview CollegeStation Cotulla Hooks Galveston Kerrville  
Brownwood SanAngelo Lufkin

...

...

iter=99992 len=3673.6 newlen=3782.1 delta=108.5 temp=0.0048 p<0.0000

iter=99993 len=3673.6 newlen=4016.5 delta=342.9 temp=0.0042 p<0.0000

iter=99994 len=3673.6 newlen=3885.9 delta=212.3 temp=0.0036 p<0.0000

iter=99995 len=3673.6 newlen=5322.4 delta=1648.8 temp=0.0030 p<0.0000

iter=99996 len=3673.6 newlen=4936.3 delta=1262.7 temp=0.0024 p<0.0000

iter=99997 len=3673.6 newlen=4055.0 delta=381.4 temp=0.0018 p<0.0000

iter=99998 len=3673.6 newlen=4908.4 delta=1234.8 temp=0.0012 p<0.0000

iter=99999 len=3673.6 newlen=5524.4 delta=1850.8 temp=0.0006 p<0.0000