Project 2: Local Searches

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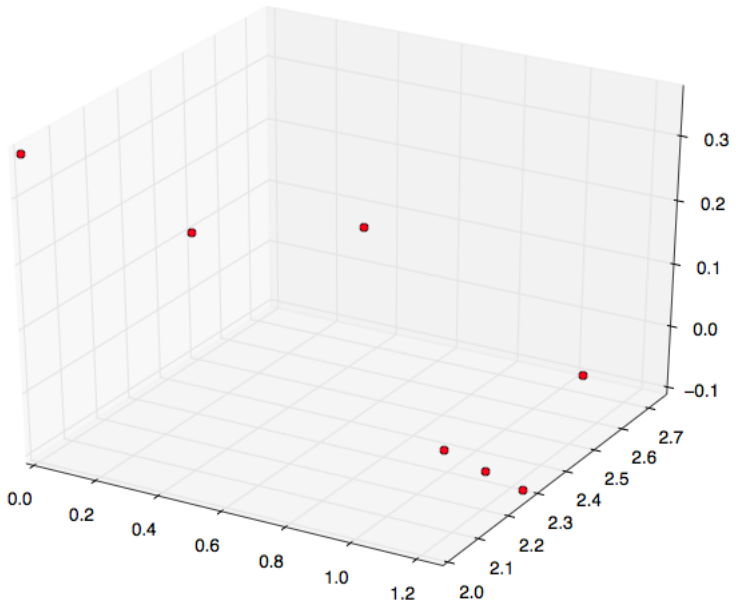
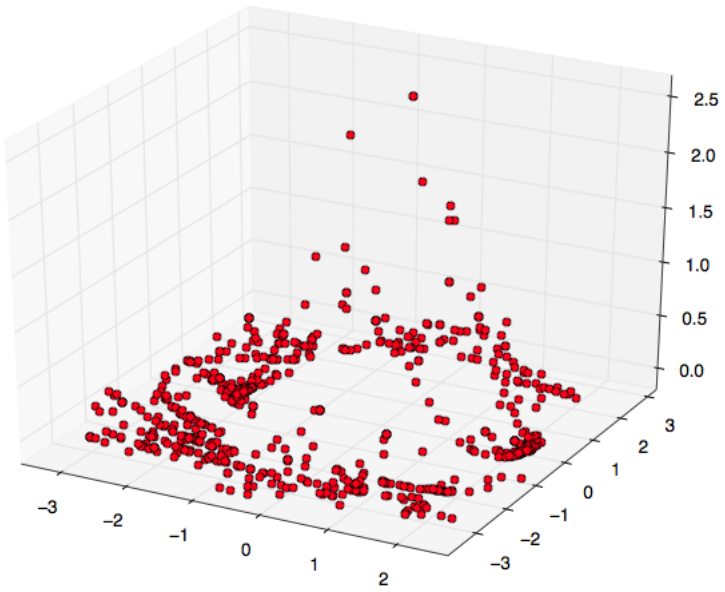
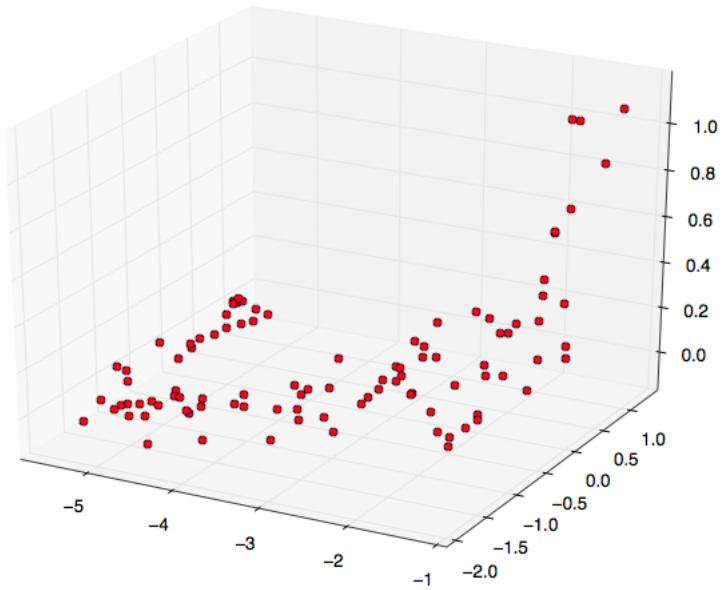
Hill Climbing:



Found the minimum to be -0.105753463142
X: 0.9196672915
Y: 2.74967609765
. .
Random Hill Climbing:



Found the minimum to be -0.150261001042
X: -2.17228670144
Y: 0.0133472304052
. .
Simulated Annealing:



Found the minimum to be -0.107512543331
X: -2.7268676726
Y: -1.27463548866
. .

So after using all three local searches, it's clear that the Random Hill Climbing was the most accurate. It was able to get a smaller minimum than the simulated annealing method, but it likely took longer based on the sheer number of points it plotted. However, the number of restarts was set to 100, so when that number is decreased it becomes less accurate but takes less time. The simulated annealing search was called with a max temperature of 100, and it is also programmed to accept more options, but a random restart doesn't occur until the counter reaches 100, so with 100 chances to find a better minimum randomly and 100 restarts, it makes sense that random hill climbing would be able to dive deeper but also will take a longer amount of time, whereas the simulated essentially has a fixed time. The hill climbing search got somewhat close to the minimum but ultimately pales into comparison to the other two local searches. It was definitely the fastest though.