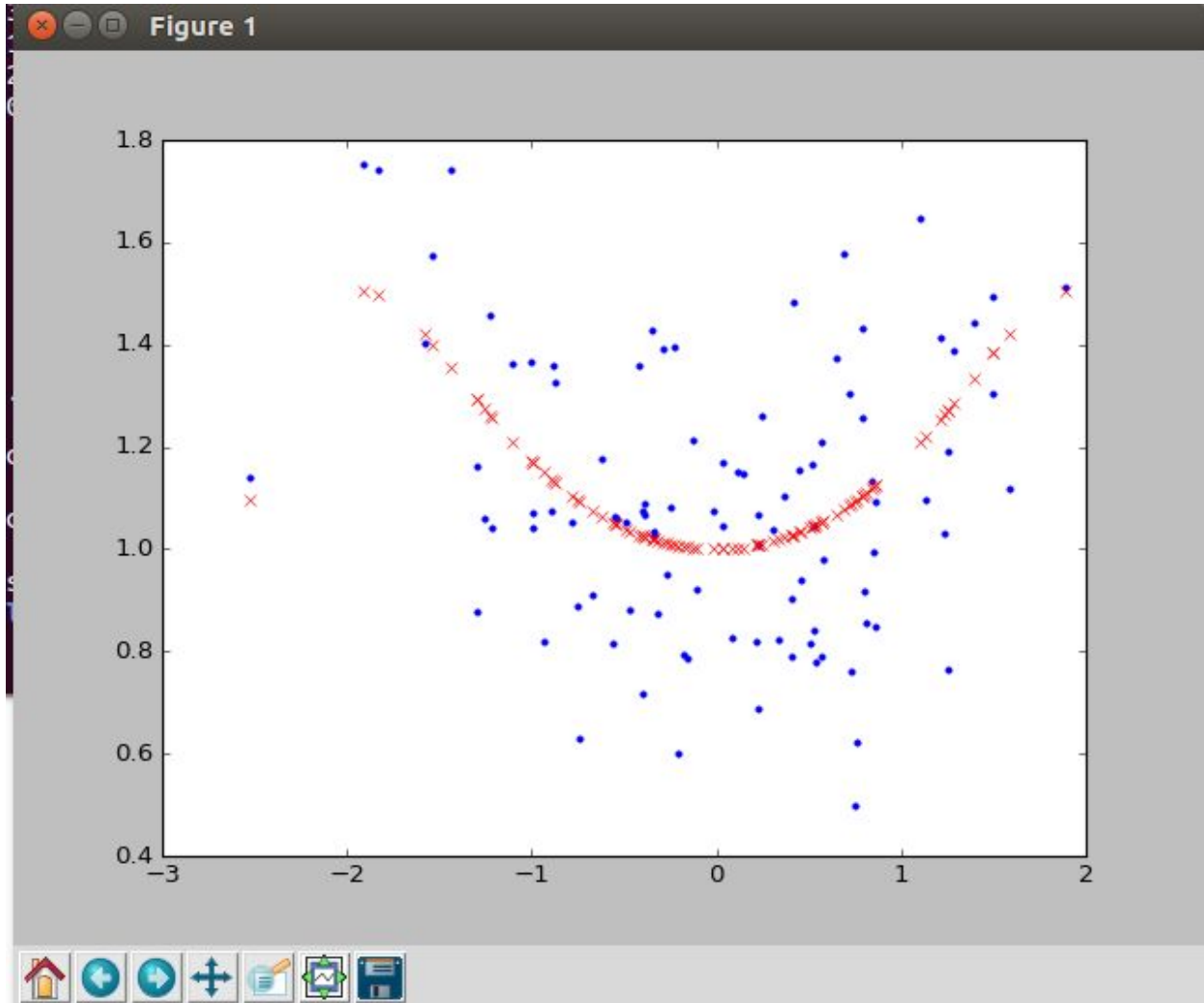


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Professor Rivas
Artificial Intelligence
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Homework 4.

a) Here is the plot that is generated for the dataset that is used in this assignment:



After the plot is generated the errors are calculated for the nearest neighbor. All the odd numbers are done between 0 and 900.

b) Here are the the errors:

```
0.282295180537
889
0.282269173173
891
0.282259488223
893
0.28223646248
895
0.282212510052
897
0.282177213034
899
0.282141955899
[0.21579807653616759, 0.18178894879880453, 0.21525624931804477, 0.22958495533315296, 0.2419291477406985, 0.24580437094054233, 0.25158491187604659, 0.25567640952041487, 0.25818374450483161, 0.260629282790
9264, 0.26259042846230551, 0.2630732476257804, 0.26370177831403013, 0.26536487243140755, 0.26663026076636069, 0.26815720527296505, 0.26956833227856003, 0.27045026056466676, 0.27073759557837752, 0.2713760
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500039025403133, 0.275502114366512, 0.275846409857844093, 0.27625171455800303, 0.27670988110083601, 0.27726519178215359, 0.27751164538702974, 0.27809403685951778, 0.27833004278902811, 0.2781850837502835, 0
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7, 0.28271630157365546, 0.28266409406349846, 0.28262289310136751, 0.28258697326234039, 0.28256153000881429, 0.282557309796236, 0.28253998124713542, 0.282548487838123239, 0.2824569077176261, 0.282406073268
5691, 0.28237174968516249, 0.28236037121052426, 0.28233992534652469, 0.282346072420276, 0.28234121973336379, 0.28234495552423094, 0.28230839753149997, 0.2822668729863466, 0.28229738714091802, 0.28229648
```

I ran the application a few times. For the first time I ran it, the best errors were at 178, 161 and 177.

```
178
0.266901656837
161
0.266878442245
177
0.266875059114
charlie@charlie-VirtualBox:~/Documents/ArtificialIntelligence/Hill/hill-04$
```

If these values are averaged, the best index is around 172. The values are so close to one another so taking the average would provide a good idea of in general where the best would be.

The second time I ran the program I got 0, 131 and 133.

```
0
0.330545861436
131
0.1855210663
133
0.185493157675
```

If these values are averages, the best index is around 88. However, in this case 0 seems to have a much higher CV Eout compared to the other two. In this scenario I would consider 0 to be the best because of how significant its value is.