אוניברסיטת בן – גוריון

הפקולטה להנדסה

המחלקה להנדסת מחשבים

מבוא לתורת המידע ולמידת מכונה

Linear and Logistic Regressions

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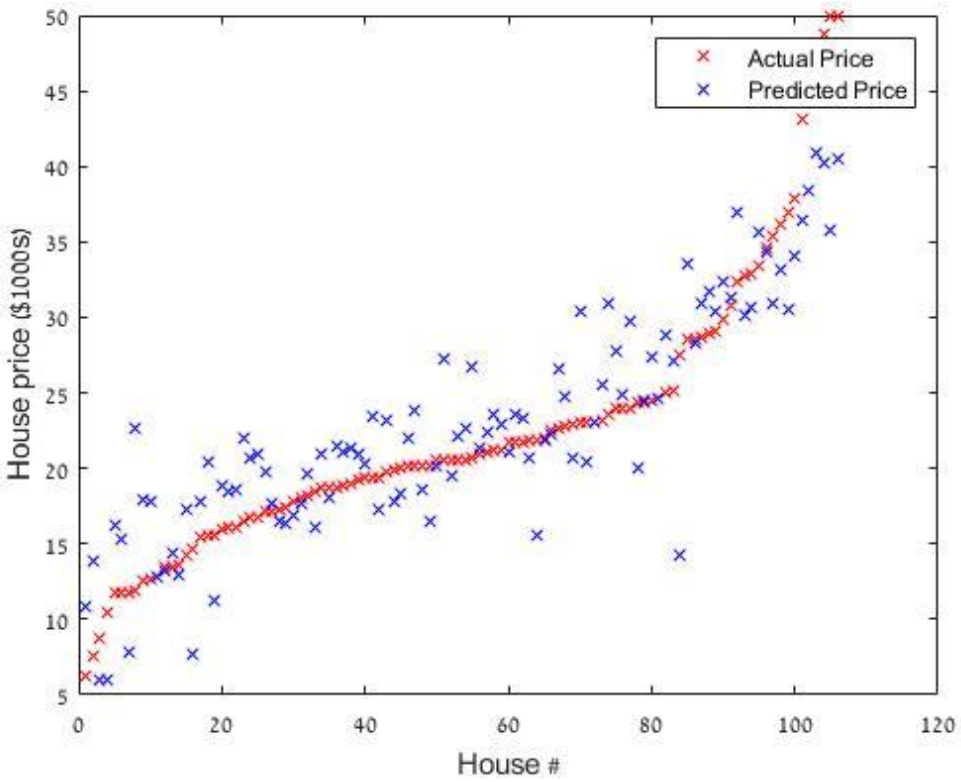
תאריך הגשה: 19.05.21

1. Linear Regression:

קוד:

```
dist=theta.'*X-y;
f= 0.5*dist*dist.';
g= dist*X.';
g=g.';
```

גרף:



2. Logistic Regression:

קוד:

```
%%% YOUR CODE HERE %%%
z=theta.'*X;
P=sigmoid(z);
f=-sum(y.*log2(P)+(1-y).*log2(1-P));
g=-(y-P)*X.';
g=g.';
```

תוצאות:

Iteration	FunEvals	Step Length	Function Val	Opt Cond
1	2	1.21342e-06	9.42251e+03	4.07165e+03
2	3	1.00000e+00	3.11390e+03	1.51208e+03
3	4	1.00000e+00	1.83480e+03	8.94231e+02
4	5	1.00000e+00	9.90909e+02	4.69746e+02
5	6	1.00000e+00	5.83994e+02	2.61782e+02
6	7	1.00000e+00	3.47950e+02	1.41944e+02
7	8	1.00000e+00	2.14122e+02	7.59194e+01
8	9	1.00000e+00	1.34718e+02	3.90592e+01
9	10	1.00000e+00	8.67101e+01	1.94518e+01
10	11	1.00000e+00	5.67036e+01	9.67704e+00
11	12	1.00000e+00	3.60922e+01	5.20218e+00
12	13	1.00000e+00	2.18440e+01	5.95661e+00
13	14	1.00000e+00	1.92577e+01	1.52748e+01
14	15	1.00000e+00	8.81153e+00	5.46129e+00
15	16	1.00000e+00	6.10323e+00	1.84920e+00
16	17	1.00000e+00	4.35117e+00	8.41352e-01
17	18	1.00000e+00	2.58398e+00	5.28973e-01
18	19	1.00000e+00	1.34875e+00	2.73885e-01
19	21	5.00000e-01	9.63617e-01	1.99410e-01
20	24	2.50000e-01	7.70149e-01	1.59889e-01
21	29	6.25000e-02	7.23214e-01	1.45075e-01
22	36	1.56250e-02	7.11985e-01	1.43398e-01
23	44	7.81250e-03	7.05723e-01	1.41286e-01
24	56	4.88281e-04	7.05374e-01	1.41222e-01
25	69	2.44141e-04	7.05203e-01	1.41187e-01
26	83	1.22070e-04	7.05115e-01	1.41168e-01
27	99	3.05176e-05	7.05092e-01	1.41164e-01
28	117	7.62939e-06	7.05086e-01	1.41162e-01
29	136	3.81470e-06	7.05083e-01	1.41161e-01
30	157	9.53674e-07	7.05082e-01	1.41161e-01
31	179	4.76837e-07	7.05081e-01	1.41161e-01
32	203	1.19209e-07	7.05081e-01	1.41161e-01
33	232	0.00000e+00	7.05081e-01	1.41161e-01

Step Size below progTol
Optimization took 1.897587 seconds.
Training accuracy: 100.0%
Test accuracy: 100.0%