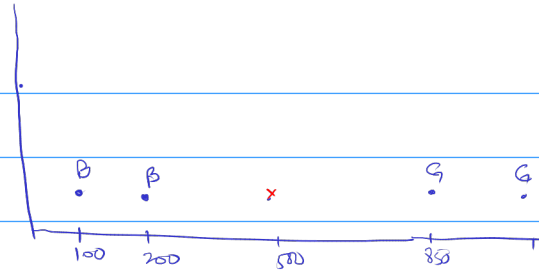
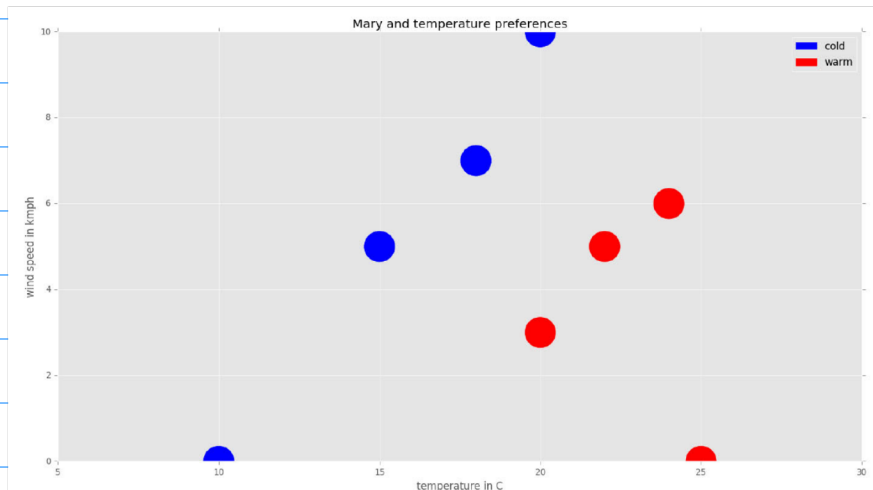


Price	Perf	
1000	G	500
850	G	350
800	G	300
→ 200	(B)	300
100	B	400
500		



10°C Cold
25°C Warm

Temperature in degrees Celsius	Wind speed in km/h	Mary's perception
10	0	Cold
25	0	Warm
15	5	Cold
20	3	Warm
18	7	Cold
20	10	Cold
22	5	Warm
24	6	Warm



Predict	Cold
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The heatmap displays Mary's temperature preferences across a range of wind speeds. The x-axis represents temperature in degrees Celsius, ranging from 5 to 30. The y-axis represents wind speed in kmph, ranging from 0 to 10. The plot is filled with a grid of circles, where blue circles indicate a preference for cold and red circles indicate a preference for warm. The transition from cold to warm occurs at approximately 18°C, with the transition point shifting slightly with wind speed.

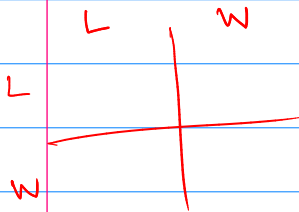
Assignment 2

1. Predict for 10%, 20%, 30%, 40% & 50%

2. Distance Measure Euclidean
 Manhattan

3. Apply KNN with $k = 1, 3, 5, 7, 9$

4. Report Confusion matrix \rightarrow accuracy
 Jaccard Index



Due Date: 5th Nov 2019

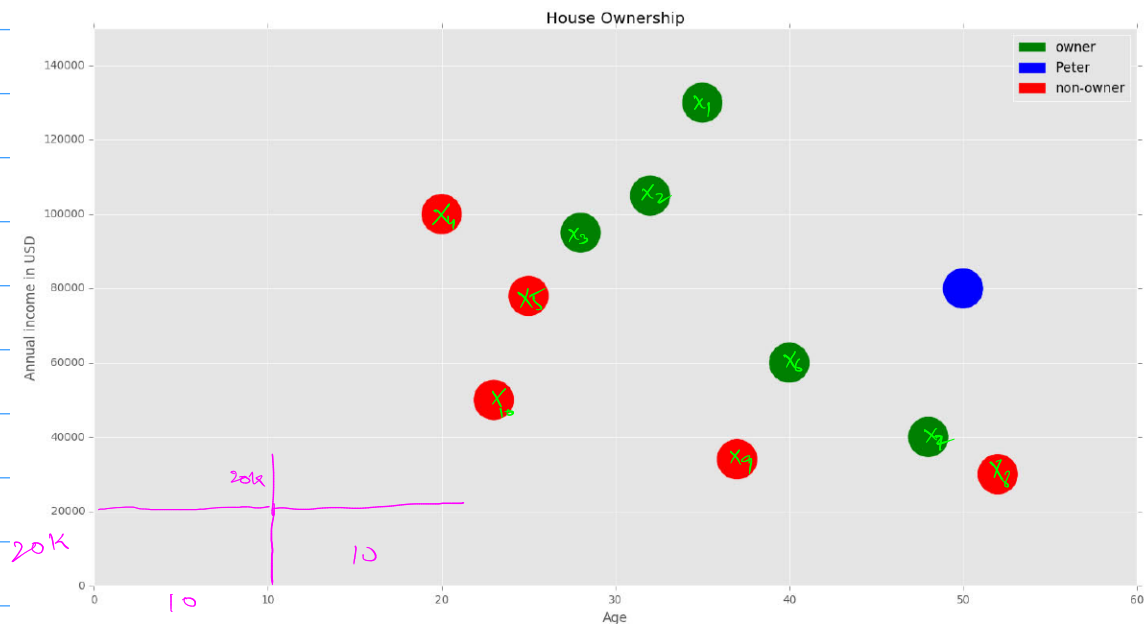
L	U	L	U	U	W
L	W	L	L		

L	L	L	L	W	W

Age	Annual income in USD	House ownership status
23	50,000	Non-owner
37	34,000	Non-owner
48	40,000	Owner
52	30,000	Non-owner
28	95,000	Owner
25	78,000	Non-owner
35	130,000	Owner
32	105,000	Owner
20	100,000	Non-owner
40	60,000	Owner
50	80,000	Peter

Divide salary by 1000
& multiply age by 2

Age Sal
min 40 30
max 104 130



$$D_{\text{man}} = |\text{pete}_{\text{age}} - \text{candidate}_{\text{age}}| + |\text{pete}_{\text{sal}} - \text{candidate}_{\text{salary}}|$$

X	distance (pete, x_i)
1	5
2	3 ✓
3	8
4	4
5	1 ✓
6	6
7	7
8	2 ✓
9	9
10	8

K=1

K=3

2, 5, 8

Y N N

$$\text{Scaled Age} = \frac{\text{Age}_i - \min(\text{Age})}{\max(\text{Age}) - \min(\text{Age})}$$

$$\frac{20-20}{52-20} = 0$$

$$\frac{52-20}{52-20} = 1$$

$$\text{Scaled Salary} = \frac{\text{Sal}_i - \min(\text{Sal})}{\max(\text{Sal}) - \min(\text{Sal})}$$

Age	Scaled age	Annual income in USD	Scaled annual income	House ownership status
23	0.09375	50,000	0.2	Non-owner
37	0.53125	34,000	0.04	Non-owner
48	0.875	40,000	0.1	Owner
52	1	30,000	0	Non-owner
28	0.25	95,000	0.65	Owner
25	0.15625	78,000	0.48	Non-owner
35	0.46875	130,000	1	Owner
32	0.375	105,000	0.75	Owner
20	0	100,000	0.7	Non-owner
40	0.625	60,000	0.3	Owner
50	0.9375	80,000	0.5	?

$$\text{Scale Age 2} = \frac{\text{Age}_i - \text{Avg}(\text{Age})}{\max(\text{Age}) - \min(\text{Age})}$$

$$\frac{\max(\text{Age}) - \min(\text{Age})}{\max(\text{Age}) - \min(\text{Age})} = 0$$

$$\frac{\max(\text{Age}) - \text{Avg}(\text{Age})}{\max(\text{Age}) - \min(\text{Age})} = 1$$

$$\frac{0-0.5}{0.5-0.5} = 0$$

$$\frac{-1-0}{1-0} = -1$$

$$\text{Avg}(\text{Age}) = 39$$

$$\frac{52-39}{52-39} = 1$$

$$\frac{52-39}{52-20} = \frac{13}{32} = 0.4$$

$$\frac{20-39}{52-39} = \frac{-19}{13} = -1.46$$

$$\frac{20-39}{52-20} = \frac{-19}{32} = -0.59$$