Home Work 2:

#1 Show that the MLE for this model:

$$SAE(w) = \sum_{i=1}^{N} |y_i - w^T x_i|$$

$Y_i \sim$ laplace $(\mu = w^* x_i, b]$

$P[y_i | x_i w] = \frac{1}{2b} \cdot e^{\frac{-|y_i - w^* x_i|}{b}}$

likelyhood → $P[y|x, w] = \prod_{P=1}^{n} P[y_i | x_i, w] = \prod_{P=1}^{n} \left[\frac{1}{2b} \cdot e^{\frac{-|y_i - w^* x_i|}{b}}\right] \rightarrow \frac{1}{(2b)} \cdot e^{-1/b} \sum_{i=1}^{n} |y_i - w^* x_i|$

as $\sum_{i=1}^{n} |y_i - w^* x_i|$ is increasing then $-1/b \sum_{i=1}^{n} |y_i - w^* x_i|$ is decreasing for example, $e^{-1/b} \sum_{i=1}^{n} |y_i - w^* x_i|$ is decreasing

This shows the likyhood is proportional to $\sum_{i=1}^{n} |y_i - w^* x_i|$ If b is fixed. The max is when $[-\sum_{i=1}^{n} |y_i - w^* x_i|]$ is maximized for example $[\sum_{i=1}^{n} |y_i - w^T x_i|$ is max. Therefore, MLE of W is also max. @ $\sum_{i=1}^{n} |y_i - w^* x_i|$

#2 Compute and report the recall the precision for thresholds t = 0, 0.2, 0.4, 0.6, 0.8 and 1

y	0	0	0	1	0	0	1	0	0	1	1	0	1	1	1	1	true Postive	False Postive	False negative	recall	percision
P(y|x)	.1	.1	.25	.25	.3	.33	.4	.52	.55	.7	.8	.85	.9	.9	.95	1.0					
t=0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	8	0	1	1/2
t=0.2	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	8	6	0	1	8/14
t=0.4	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	6	3	2	6/8	6/9
t=0.6	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	6	1	2	6/8	6/7
t=0.8	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	4	1	4	4/8	4/5
t=1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0

#3 debriefing

1) I started early and worked on a section a day

2) difficult but better than before

3) mostly alone

4) I think I understand, just lost on how to get W and run trainlogistic with out a test y I think thats the point W is like the K of the last project. You just have to do your best to find the right one.

Kaggle:

↳ I used my name Alexis Marie Doyle

but I did change my profile to Definitely not Alexis Marie Doyle

Just an FYI incase it updates