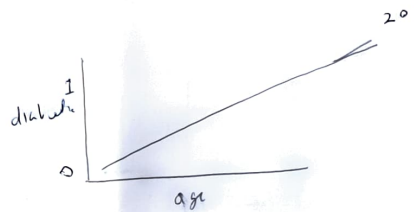
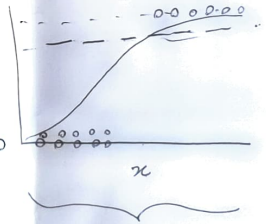
LOGISTIC REGRESSION, ANNs, LLMs (PT 2)

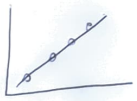
age	gender	ethnicity	BMI	diabetic
70	F	SA	26	1
⋮	⋮	⋮	⋮	0
65	M	A	23	1
				0



$$\frac{1}{1+e^{-x}}$$

2.71





$y = ax + b$

$+1 > b$

$$\frac{1}{1+e^{-ax}} \rightarrow a \quad \boxed{\frac{1}{1+e^{-(ax+b)}}}$$

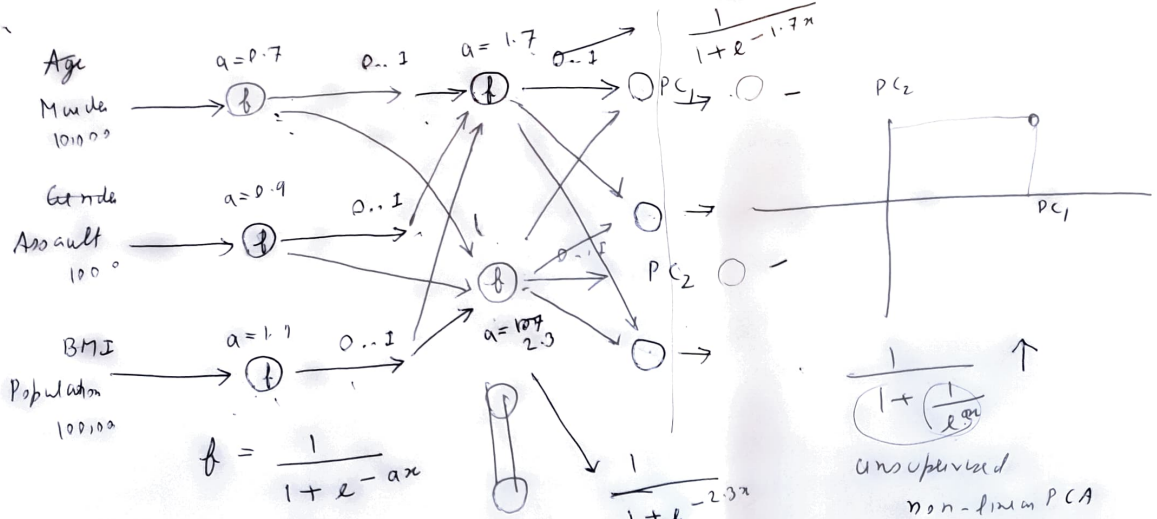
PCA

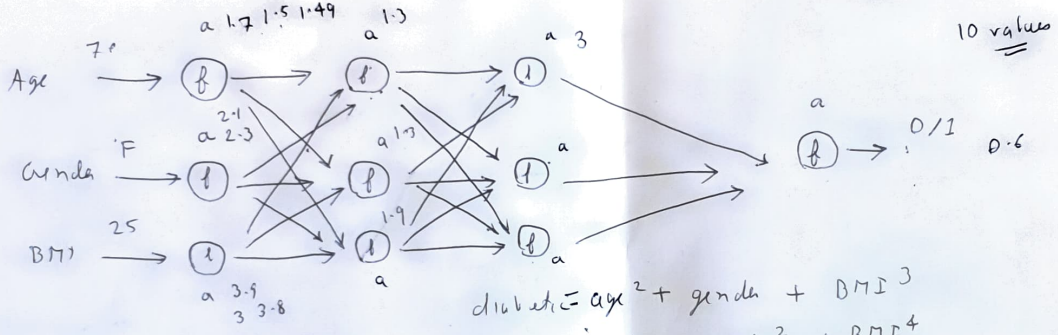
	Murder	Assault	Population
Wisconsin	10,000		
California	1000		
Vermont	100		

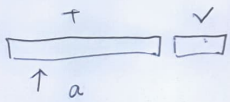
$$PC_1 = \phi_1 \times \text{Murder}' + \phi_2 \times \text{Assault}' + \phi_3 \times \text{Population}'$$

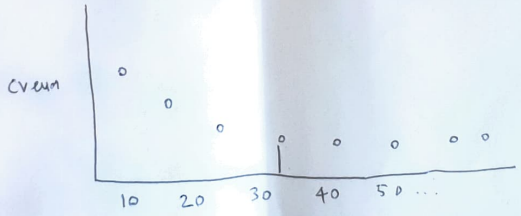
$$PC_2 = \phi_4 \times \text{Murder} + \phi_5 \times \text{Assault} + \phi_6 \times \text{Population}$$

$$\phi_{31}^{a} \times \frac{1}{1 + e^{-\phi_1 \text{Murder}}}$$


Age
Murder
Gender
Assault
BMI
Population
a = 0.7
a = 0.9
a = 1.7
0..1
a = 1.7
2.3
PC1
PC2
f = 1 / 1 + e^-ax
1 / 1 + e^-1.7x
1 / 1 + e^-2.3x
1 / 1 + 1 / e^x
unsupervised
non-linear PCA


Age
Gender
BMI
7
F
25
a 1.7 1.5 1.49
a 1.3
a 3
a 2.1 2.3
a 1.3
1.9
a 3.9 3 3.8
a
a
a
a
10 values
0/1
0.6
diabetic = age^2 + gender + BMI 3
age^3 + gender^2 + BMI^4


+
✓
a


Cream
10
20
30
40
50 ...