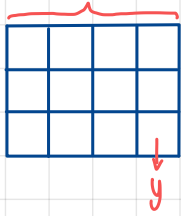


## Machine Learning หรือ Classical

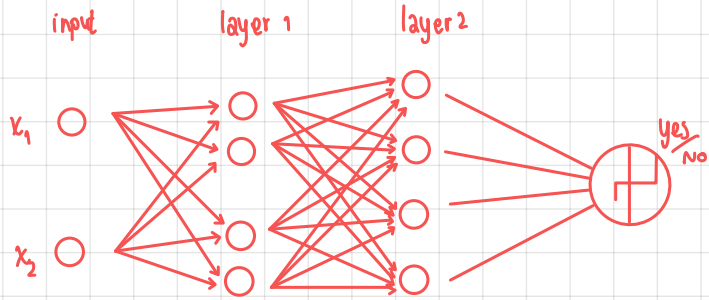


feature of classical =  $\{x_1, x_2, x_3, \dots, x_n\} \times \mathbb{R}$

Ex Histograms of oriented gradients

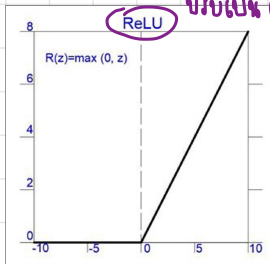
## Deep Learning

Ex Sobel filter

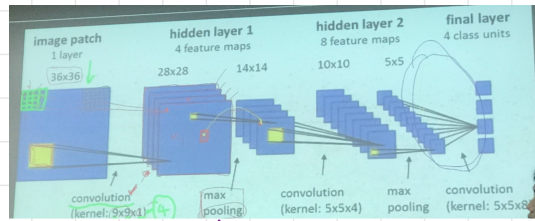


fully connected Dense layer

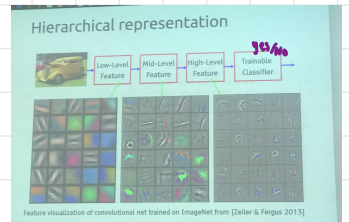
## Activation function : กำหนดค่า range



ปรับค่าไม่ให้ต่ำกว่า 0  
ปรับค่าไม่ให้ต่ำกว่า 0

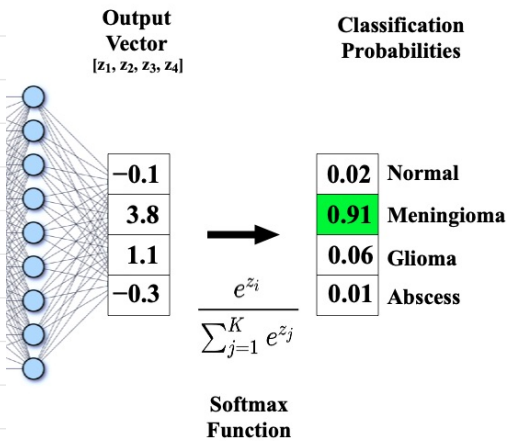


พิจารณาที่ windows  
แล้วเลือกค่าที่มากที่สุด



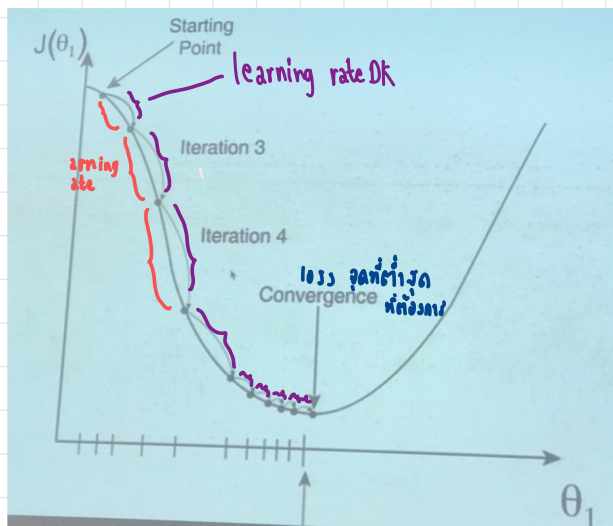
H11	H12	H13	X	F11	F12	F13	F14	F15	F16	=	G11	G12	G13	G14	G15	G16
H21	H22	H23		F21	F22	F23	F24	F25	F26		G21	G22	G23	G24	G25	G26
H31	H32	H33		F31	F32	F33	F34	F35	F36		G31	G32	G33	G34	G35	G36
				F41	F42	F43	F44	F45	F46		G41	G42	G43	G44	G45	G46
				F51	F52	F53	F54	F55	F56		G51	G52	G53	G54	G55	G56
				F61	F62	F63	F64	F65	F66		G61	G62	G63	G64	G65	G66

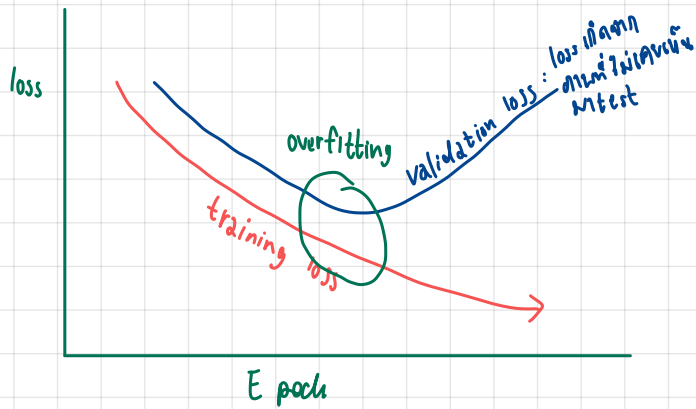
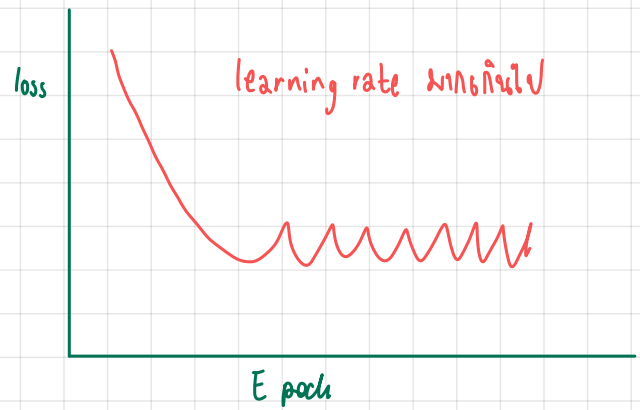
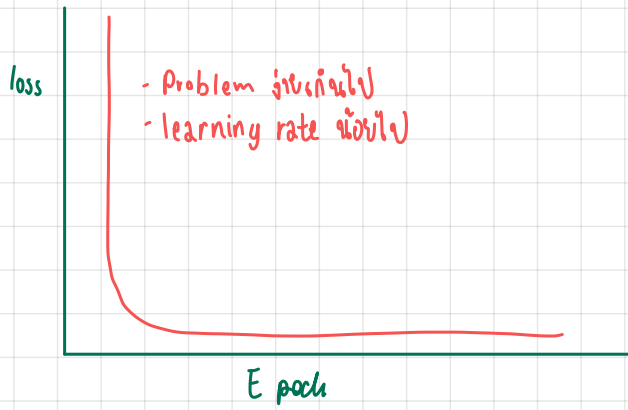
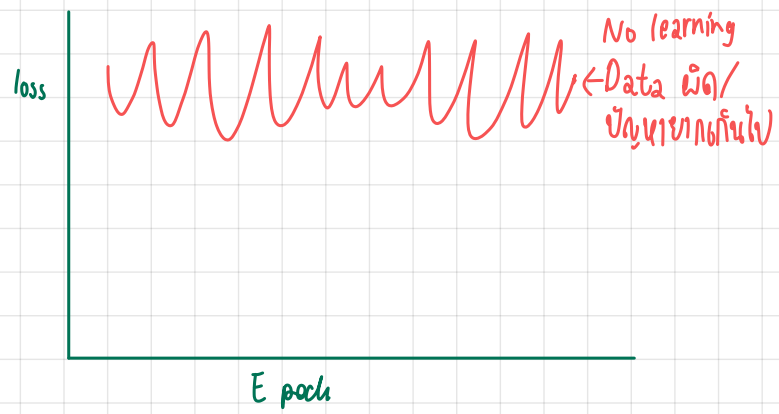
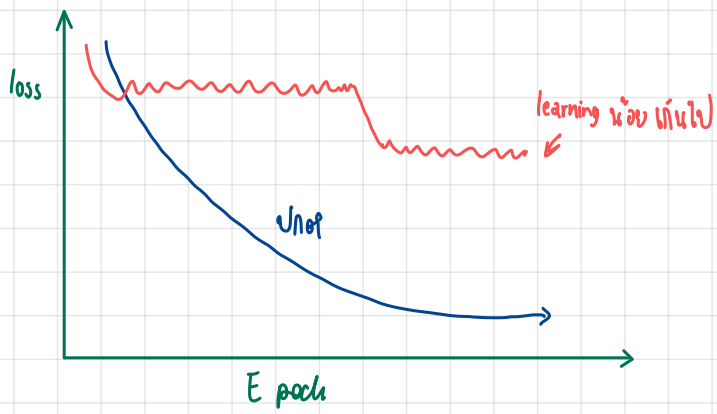
## softmax



$$\text{Loss} = - \frac{1}{\text{output size}} \sum_{i=1}^{\text{output size}} y_i \cdot \log \hat{y}_i + (1 - y_i) \cdot \log (1 - \hat{y}_i)$$

ทำนาย predict





បញ្ជាក់ batch ទិន្នន័យ  
training data

↓ ឧបទ្វីប data បំបែកជា  
Batch ← ឧបទ្វីប weight  
បំបែកជាបំណែង

