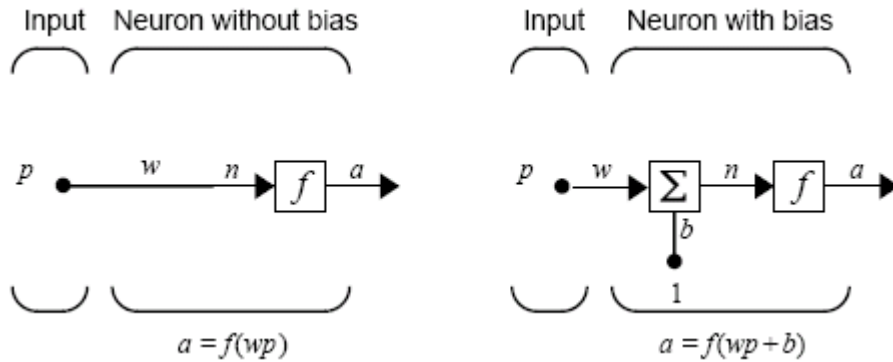


BAB II

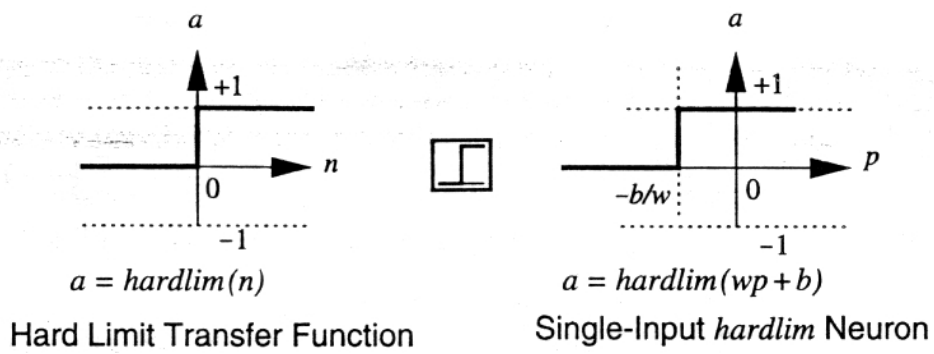
MODEL NEURON DAN ARSITEKTUR JARINGAN

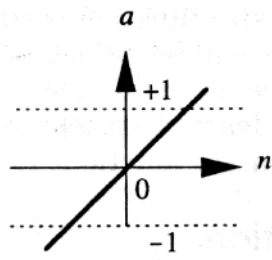
2.1 Model Neuron

2.1.1 Single-Input Neuron



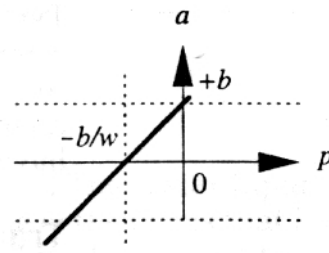
2.1.2 Fungsi transfer





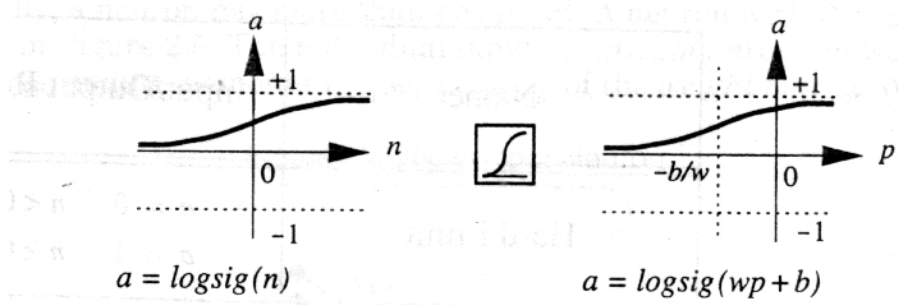
$$a = \text{purelin}(n)$$

Linear Transfer Function












$$a = \text{purelin}(wp + b)$$

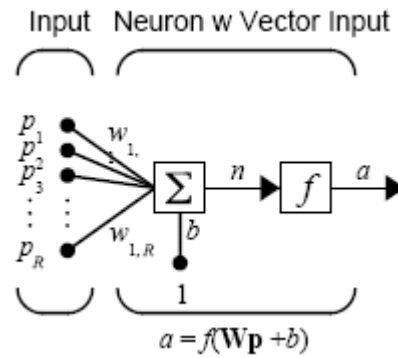
Single-Input *purelin* Neuron



Log-Sigmoid Transfer Function Single-Input *logsig* Neuron

Name	Input/Output Relation	Icon	MATLAB Function
Hard Limit	$a = 0 \quad n < 0$ $a = 1 \quad n \geq 0$		hardlim
Symmetrical Hard Limit	$a = -1 \quad n < 0$ $a = +1 \quad n \geq 0$		hardlims
Linear	$a = n$		purelin
Saturating Linear	$a = 0 \quad n < 0$ $a = n \quad 0 \leq n \leq 1$ $a = 1 \quad n > 1$		satlin
Symmetric Saturating Linear	$a = -1 \quad n < -1$ $a = n \quad -1 \leq n \leq 1$ $a = 1 \quad n > 1$		satlins
Log-Sigmoid	$a = \frac{1}{1 + e^{-n}}$		logsig
Hyperbolic Tangent Sigmoid	$a = \frac{e^n - e^{-n}}{e^n + e^{-n}}$		tansig
Positive Linear	$a = 0 \quad n < 0$ $a = n \quad 0 \leq n$		poslin
Competitive	$a = 1$ neuron with max n $a = 0$ all other neurons		compet

2.1.3 Multiple-Input Neuron



Input jaringan (n) dihitung sbb :

$$n = w_{1,1}p_1 + w_{1,2}p_2 + \dots + w_{1,R}p_R + b$$

atau

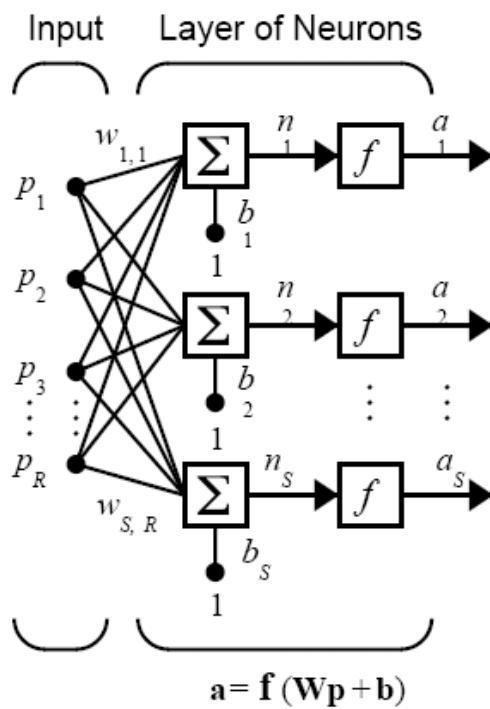
$$n = \mathbf{Wp} + b$$

Output neuron (a) :

$$a = f(\mathbf{Wp} + b)$$

2.2 Arsitektur Jaringan

2.2.1 Neuron selapis



Dengan

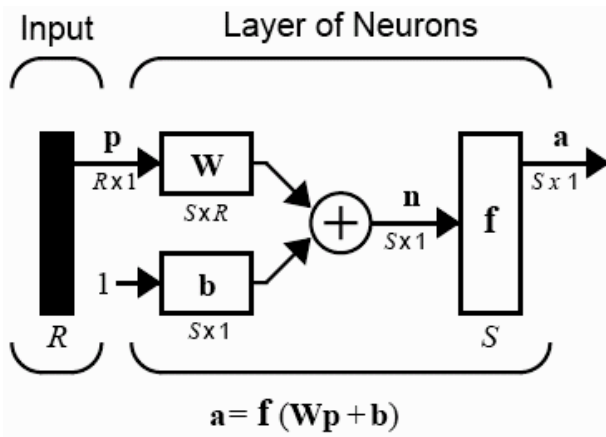
R sebagai jumlah elemen vektor input dan

S sebagai jumlah neuron dalam lapisan

Elemen vektor input jaringan dipresentasikan dalam bentuk matriks :

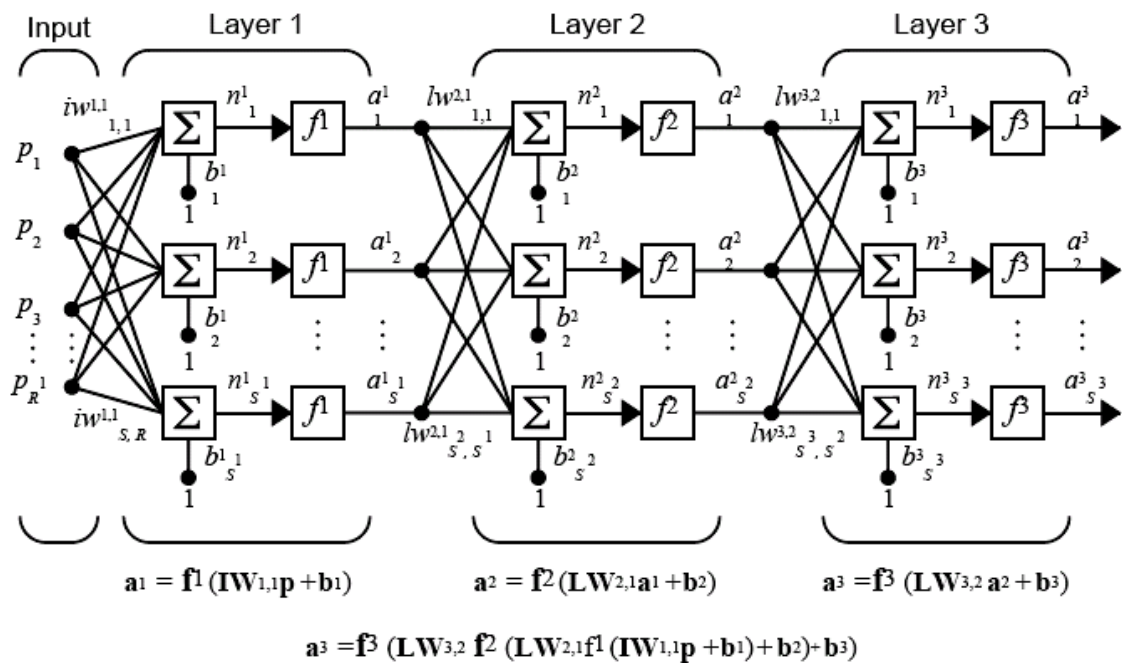
$$\mathbf{W} = \begin{bmatrix} w_{1,1} & w_{1,2} & \cdots & w_{1,R} \\ w_{2,1} & w_{2,2} & \cdots & w_{2,R} \\ \vdots & \vdots & \ddots & \vdots \\ w_{S,1} & w_{S,2} & \cdots & w_{S,R} \end{bmatrix}$$

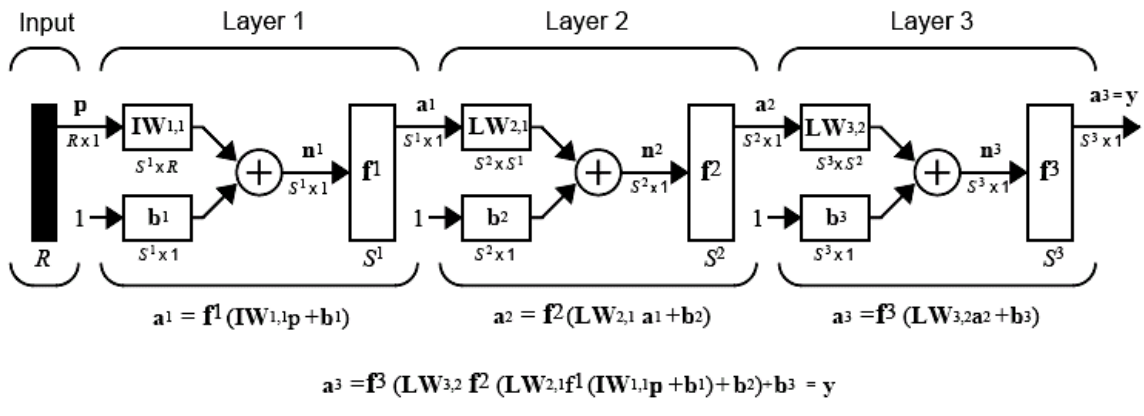
Selapis neuron dapat digambarkan dengan notasi sbb. :



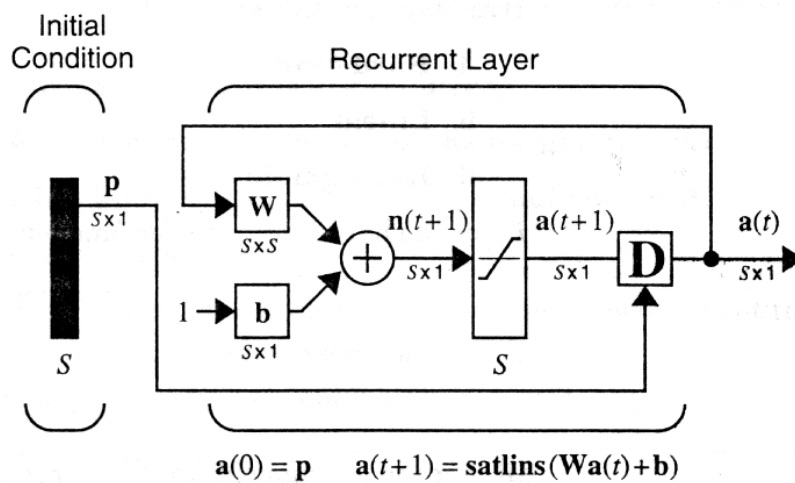
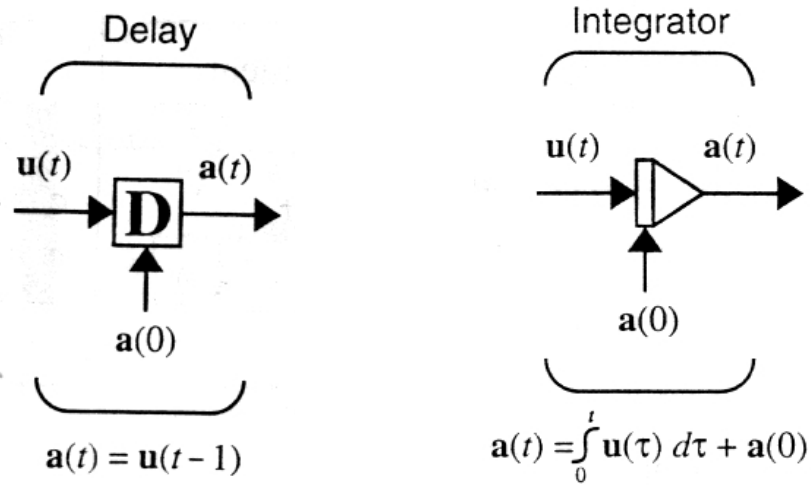
Dengan
 R sebagai jumlah elemen vektor input dan
 S sebagai jumlah neuron dalam lapisan

2.2.2 Neuron beberapa lapis





2.2.3 Jaringan recurrent



Petunjuk untuk memilih arsitektur jaringan

Spesifikasi masalah dapat digunakan untuk menolong dalam penentuan arsitektur jaringan, sbb. :

1. Jumlah input jaringan = jumlah input masalah

2. Jumlah neuron dalam lapisan output = jumlah output masalah
3. Fungsi transfer lapisan output dipilih sedemikian rupa sesuai dengan spesifikasi output masalah