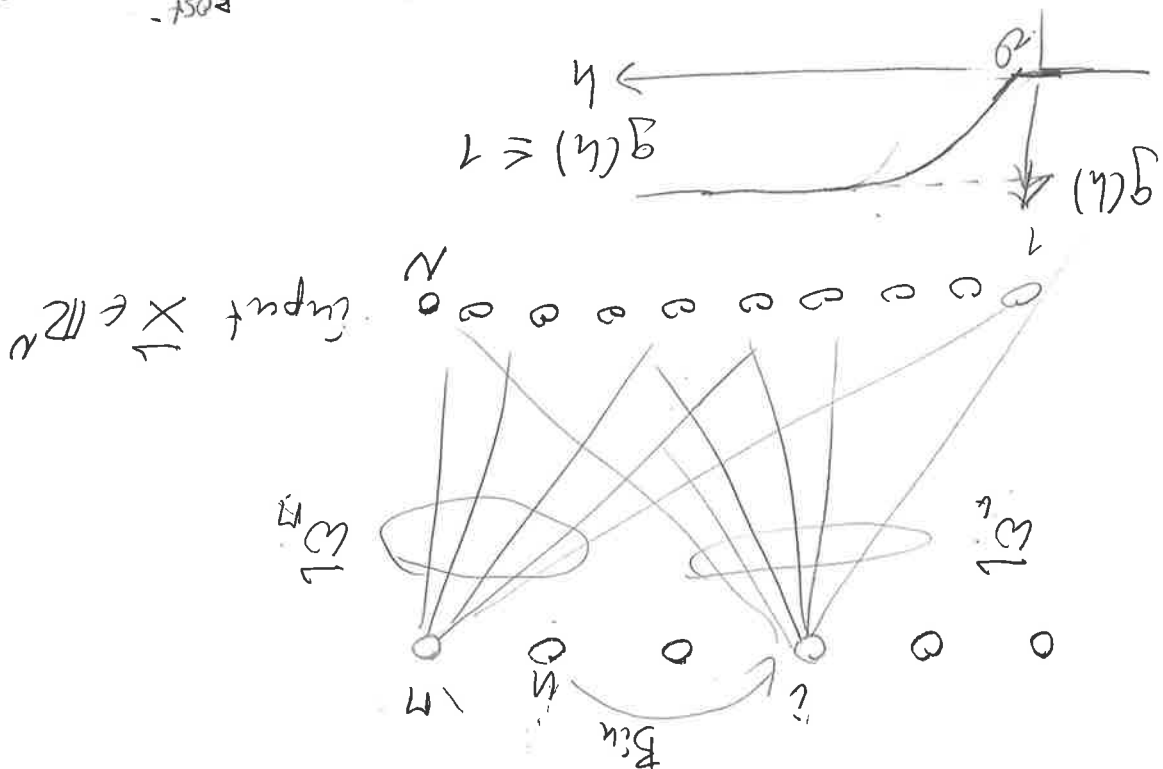




$$v_i^{post}(t) = g \left[\sum_j w_{ij} \cdot x_j(t) \right] - \sum_{n \neq i} B_{in} v_n^{post}(t) + E_{in} v_i^{post}(t)$$

can be included $\rightarrow$ $E_{in} = +1 \Rightarrow -B_{in}$

dynamics/updaters

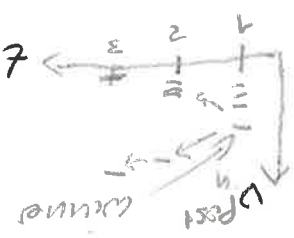
Suppose $|x|^2 = 1, |\vec{w}|^2 \leq 1 \Rightarrow |\vec{w}^T x| \leq 1$

fixed input x for $t=0, 1, 2, \dots, t_{max}$ forward input

$t=0: v_i^{post} = 0$ for all i

$v_i^{pre} = x_i$

$$t=1 \quad v_i^{post}(1) = g[\vec{w}_i^T x]$$



k is winner:

$$|\vec{x}^u - \vec{w}_k|^2 \leq |\vec{x}^u - \vec{w}_i|^2 \quad \text{for all } i$$

$$\cancel{\|\vec{x}^u\|^2} + \|\vec{w}_k\|^2 - \vec{w}_k^T \cdot \vec{x}^u \leq \cancel{\|\vec{x}^u\|^2} + \|\vec{w}_i\|^2 - \vec{w}_i^T \cdot \vec{x}^u$$

cut if
 $\|\vec{w}_k\|^2 = \|\vec{w}_i\|^2 (=1)$

$$\Rightarrow \underline{\vec{w}_k^T \cdot \vec{x}^u \geq \vec{w}_i^T \cdot \vec{x}^u} \quad \text{for all } i$$