

MICHAEL NELSON's WORKS

THE HADAMARD PRODUCT

- $s \odot t$ is the notation of Hadamard product, this is similar to cross correlation but there is other calculations other than the adjacent element multiplication.

THE BACK PROPOGATION ALGORITHM

1. Input (x) : Set the corresponding activation a_1 for the input layer.
2. Feedforward: For each $l=1,2,3,4,\dots,L$ compute $z_l = w_l a(l-1) + b_l$ and, $a_l = \sigma(z_l)$.
3. Output error δ_L : Compute the vector $\delta_L = \nabla_a C \odot \sigma'(z_L)$.
4. Backpropagate the error: For each $l = L-1, L-2, \dots, 2$ compute $\delta_l = (w_{l+1}^T \odot \delta_{l+1}) \odot \sigma'(z_l)$.
5. Output: The gradient of the cost function is given by $\partial C / \partial w(l)(jk) = a_l - 1_k / \delta_l$ and $\partial C / \partial b_l j = \delta_l j$.