

5.28 Let's assume that the kernel has M weights, with the m^{th} element represented by w_m , and that the convolution results in a feature map whose units are indexed by j .

Then, since the weights are shared, 5.50 becomes a summation:

$$\frac{\partial E_n}{\partial w_m} = \sum_j \frac{\partial E_n}{\partial a_j} \frac{\partial a_j}{\partial w_m}$$