

NNIF Input/Output LayerScaling

Input unit scaling

Wanted: $x_n(x) = ux + v$

Input scaling: $x_s = ax + b$

Input normalisation: $x_n = cx_s + d$ where $c = \frac{1}{x_{max} - x_{min}}$ and $d = \frac{-x_{min}}{x_{max} - x_{min}}$

Input unit scaling: $x_n = ux + v \rightarrow u = ca$ and $v = cb + d$

Output unit scaling

Wanted: $x(x_n) = u'x_n + v'$

Output unit scaling: $x = \frac{x_n - v}{u} \rightarrow u' = \frac{1}{u} = \frac{1}{ca}$ and $v' = \frac{-v}{u} = \frac{-(cb+d)}{ca}$