



deeplearning.ai

Batch Normalization

Batch Norm at
test time

Batch Norm at test time

$$\begin{aligned} \rightarrow \underline{\mu} &= \frac{1}{m} \sum_i \underline{z^{(i)}} \\ \rightarrow \underline{\sigma^2} &= \frac{1}{m} \sum_i (\underline{z^{(i)}} - \underline{\mu})^2 \end{aligned}$$

$$\rightarrow z_{\text{norm}}^{(i)} = \frac{z^{(i)} - \underline{\mu}}{\sqrt{\sigma^2 + \underline{\epsilon}}} \quad \leftarrow$$

$$\rightarrow \tilde{z}^{(i)} = \gamma \underline{z_{\text{norm}}}^{(i)} + \beta$$

