

Batch Normalization

Batch Norm at test time

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$$\mu = \frac{1}{\widehat{m}} \sum_{i} z^{(i)}$$

$$\sigma^{2} = \frac{1}{m} \sum_{i} (z^{(i)} - \mu)^{2}$$

$$z^{(i)}_{norm} = \frac{z^{(i)} - \mu}{\sqrt{\sigma^{2} + \varepsilon}}$$

$$\tilde{z}^{(i)} = \gamma z^{(i)}_{norm} + \beta$$

M,
$$C^2$$
: estimate using exponentially weighted asserble (across unini-boothle).

XS13, X 511, X 513, ...

P13[1] $M^{23}[1]$ $M^{23}[1]$ M
 O_1 O_2 O_3 O_2
 O_2
 O_3
 O_4
 O_5
 O_7
 O_8
 O_8
 O_8
 O_8
 O_8

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