XRAY Loss 1 Nov 2020

$$L_{W-CEL}(f(\vec{x}), \vec{y}) = \beta_P \sum_{y_c=1} -\ln(f(x_c)) + \beta_N \sum_{y_c=0} -\ln(1 - f(x_c))$$

$$\beta_P \frac{|P|+|N|}{|P|} \qquad \beta_N = \frac{|P|+|N|}{|N|} \qquad \text{dans un Batch}$$

Tensor Flow $\quad x = f(x) \quad z = label$

① $z * -\log(\sigma(x)) \qquad + (1-z) * -\log(1 - \sigma(x))$

② $z * -\log(1/1+e^{-x}) + (1-z) * -\log(e^{-x}/1+e^{-x})$

③ $z * \oplus\log(1+e^{-x}) \qquad + (1-z) * -\log(e^{-x}) + \log(1+e^{-x})$

④ $z * +\log(1+e^{-x}) \qquad + (1-z) * (x + \log(1+e^{-x}))$

⑤ $(1-z)*x + \log(1+e^{-x})$

⑥ $x - xz + \log(1+e^{-x})$

$x > 0$ ⑦ $-x * z + \log(1+e^{x})$

⑧ $\max(x, 0) - x*z + \log(1+e^{-abs(x)})$

④ → ⑤ → $c_1 \, z*A + (1-z)(x+A).c_2 \qquad c_1 zA - c_2 zA + (1-z)x c_2$

$$\frac{1}{1+e^{-x}} = \frac{e^x}{e^x+1}$$

$$1+e^{-x} = \frac{e^x+1}{e^x}$$

$$\frac{\log(e^x+1)}{e^x} = \log(e^x+1) - \log(e^x)$$

$$= \log(e^x+1) - x$$

Avec correction pour le imbalance:

4    $\beta_P\left(Z * \log\left(1+e^{-x}\right)\right) + \beta_N\left[(1-z) * \left(x + \log\left(1+e^{-x}\right)\right)\right]$ $x > 0$

$\beta_P\left(Z * \log\left(\dfrac{e^x+1}{e^x}\right) + \beta_N\left[(1-z) * \left(x + \log\dfrac{e^x+1}{e^x}\right)\right]\right)$

$\beta_P\left(Z * \left(\log(e^x+1) - x\right)\right) + \beta_N\left[(1-z)\left(\log(e^x+1)\right)\right]$

$\left[\beta_P\left(Z * \left(\log\left(1+e^{-x}\right) + \min(0,x)\right)\right) + \beta_N\left[(1-z) * \left(\max(0,x) + \log\left(e^{-x}+1\right)\right)\right]\right]$

Cell - f slurm ... out

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