Math for Deep Learning

What You Need to Know to Understand Neural Networks

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errata updated to print 2

<table>
<tr><th>Page</th><th>Error</th><th>Correction</th><th>Print corrected</th></tr>
<tr><td>6</td><td><table><tr><th>NumPy Name</th><th>Equivalent C Type</th><th>Range</th></tr><tr><td>float32</td><td>float</td><td>$\pm [1.175 \times 10^{38}, 3.403 \times 10^{38}]$</td></tr><tr><td>uint8</td><td>unsigned char</td><td>$[0, 255 = 2^{2} - 1]$</td></tr></table></td><td><table><tr><th>NumPy Name</th><th>Equivalent C Type</th><th>Range</th></tr><tr><td>float32</td><td>float</td><td>$\pm [1.175 \times 10^{-38}, 3.403 \times 10^{38}]$</td></tr><tr><td>uint8</td><td>unsigned char</td><td>$[0, 255 = 2^{8} - 1]$</td></tr></table></td><td>Print 2</td></tr>
<tr><td>119</td><td>Equation replacement</td><td>$$\begin{aligned} \boldsymbol{a} \times \boldsymbol{b} &= \|\boldsymbol{a}\| \|\boldsymbol{b}\| \sin(\theta) \hat{\boldsymbol{n}} \\ &= (a_1 b_2 - a_2 b_1, a_2 b_0 - a_0 b_2, a_0 b_1 - a_1 b_0) \qquad (5.6) \end{aligned}$$</td><td>Pending</td></tr>
<tr><td>128</td><td>Equation replacement</td><td>$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} \begin{bmatrix} 11 \\ 12 \\ 13 \end{bmatrix} = \begin{bmatrix} 74 \\ 182 \\ 290 \end{bmatrix}$$</td><td>Pending</td></tr>
<tr><td>175</td><td>But $e\ x \ln a = a^x$, so we have . . .</td><td>But $e^{x \ln a} = a^x$, so we have . . .</td><td>Pending</td></tr>
<tr><td>183</td><td>For example, above, we saw that the partial derivative of $f(x, y)$ = . . .</td><td>For example, above, we saw that the partial derivative of $f(x, y, t, z)$ = . . .</td><td>Pending</td></tr>
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198	Equation replacement	$$\frac{\partial \boldsymbol{F}}{\partial \boldsymbol{x}} = \begin{bmatrix} \frac{\partial f_{00}}{\partial x} & \frac{\partial f_{01}}{\partial x} & \cdots & \frac{\partial f_{0,m-1}}{\partial x} \\ \frac{\partial f_{10}}{\partial x} & \frac{\partial f_{11}}{\partial x} & \cdots & \frac{\partial f_{1,m-1}}{\partial x} \\ \vdots & \vdots & & \vdots \\ \frac{\partial f_{n-1,0}}{\partial x} & \frac{\partial f_{n-1,1}}{\partial x} & \cdots & \frac{\partial f_{n-1,m-1}}{\partial x} \end{bmatrix}$$	Pending
257	Equation replacement	$$\begin{aligned} \frac{\partial E}{\partial \boldsymbol{x}} &= \frac{\partial E}{\partial \boldsymbol{y}} \frac{\partial \boldsymbol{y}}{\partial \boldsymbol{x}} \\ &= \left[\frac{\partial E}{\partial y_0} \frac{\partial y_0}{\partial x_0} \; \frac{\partial E}{\partial y_1} \frac{\partial y_1}{\partial x_1} \; \ldots \right]^\top \\ &= \left[\frac{\partial E}{\partial y_0} \sigma'(x_0) \; \frac{\partial E}{\partial y_1} \sigma'(x_1) \; \ldots \right]^\top \\ &= \frac{\partial E}{\partial \boldsymbol{y}} \odot \boldsymbol{\sigma}'(\boldsymbol{x}) \qquad (10.10) \end{aligned}$$	Pending
261	`self.delta_w += np.dot(self.input.T, output_error)`	`self.delta_w += np.dot(weights_error)`	Pending
307	URL update	You can find them here: *https://www.cs.toronto.edu/~hinton/coursera_lectures.html*	Print 2