



tensorflow key concepts

It is not magic



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From near death to the AI Hype

A pendulum movement



Can you build me a ----- using that
Google open source stuff?

- A. *Chatbot*
- B. *Recommendation System*
- C. *Personal Assistant*
- D. *Prediction Model*
- E. *Anything the marketing team thinks*





Thiago de Faria

DataOps Consultant, LINKIT



Open source, fast, distributed, scalable & Google'ish

Numerical computation at scale

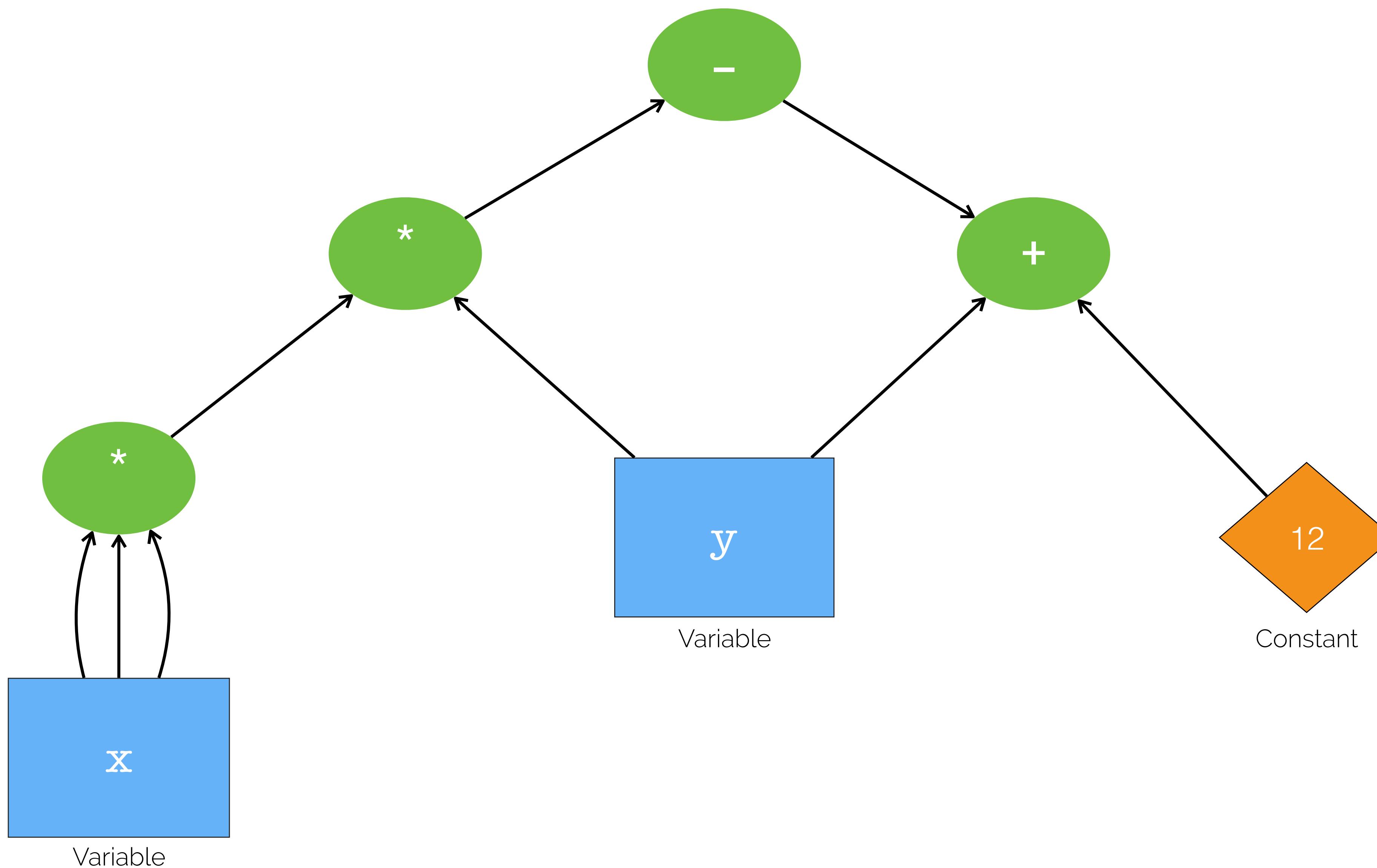


All Google products have a TF on it

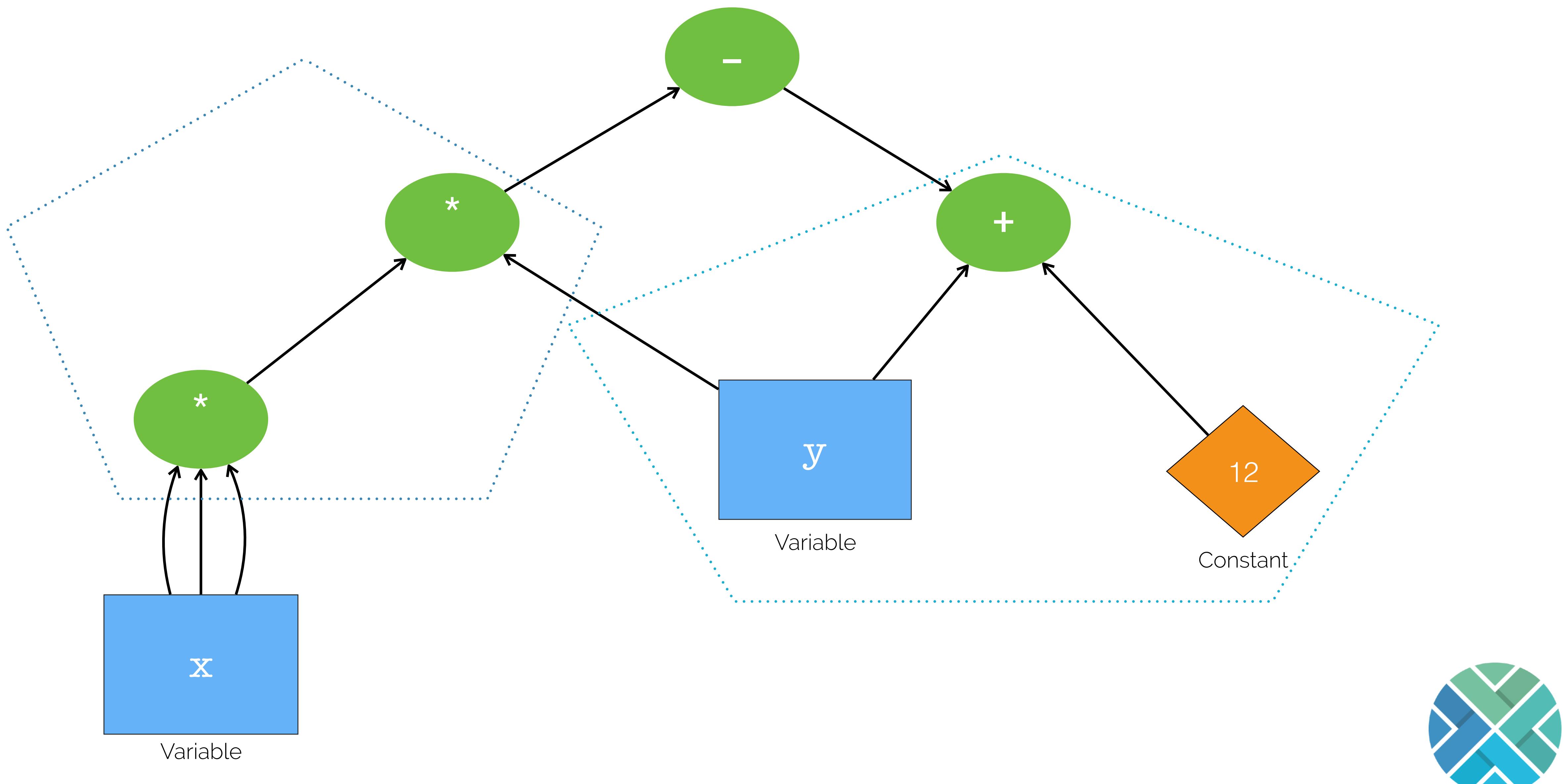
Google Brain project. Now it is on 1.0.0!



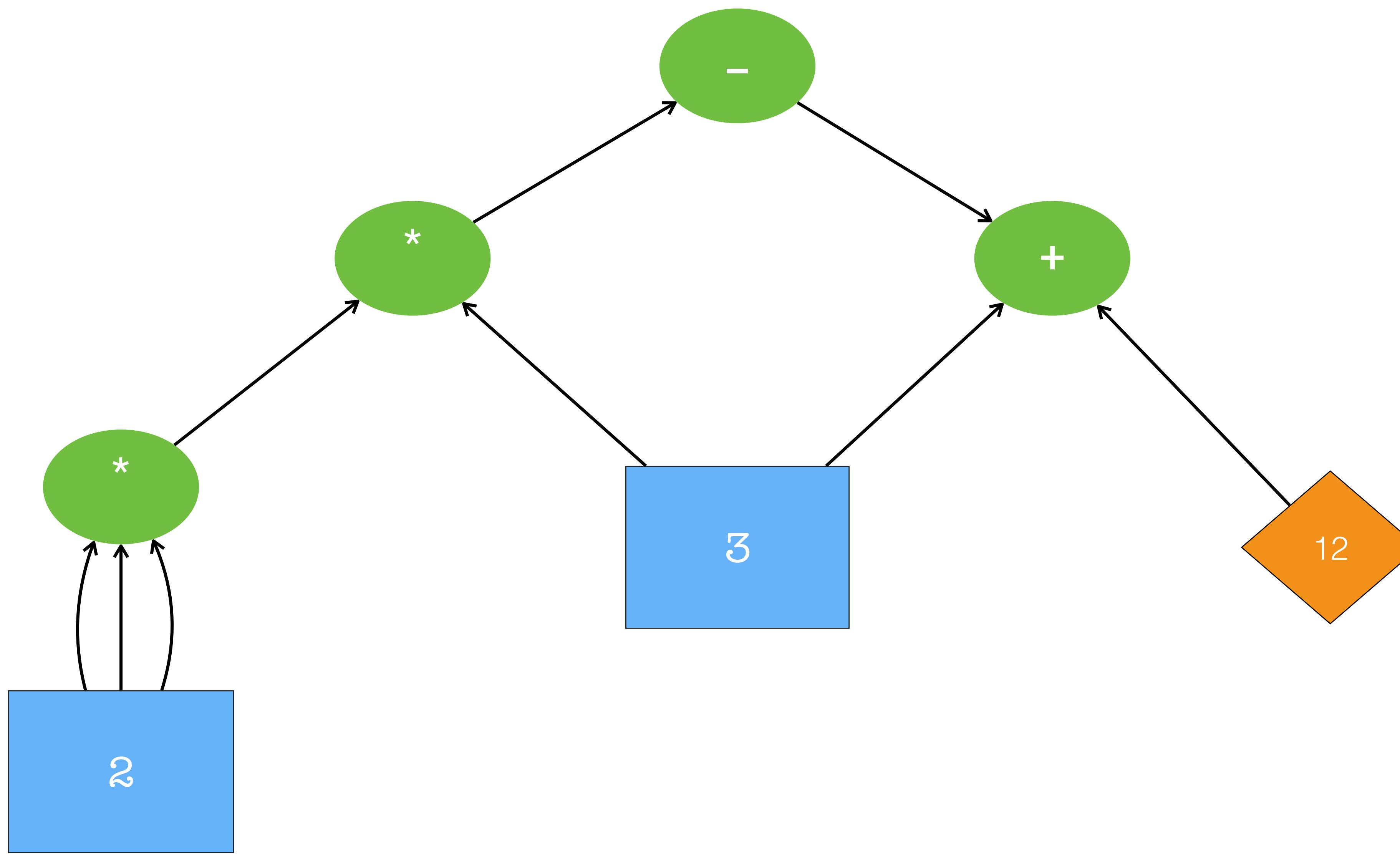
$$f(x, y) = x^3 * y - y + 12$$



$$f(x, y) = x^3 * y - y + 12$$



$$f(2, 3) = 2^3 * 3 - 3 + 12 = 8 * 3 + 9 = 33$$



Dummy Demo Time

- Please, Demo Gods do not make my HDMI cable break or something...



Raw tensorflow steps

Describe the graph, initialise and execute



Neural Nets and Deep Learning

Images, NLP, Audio

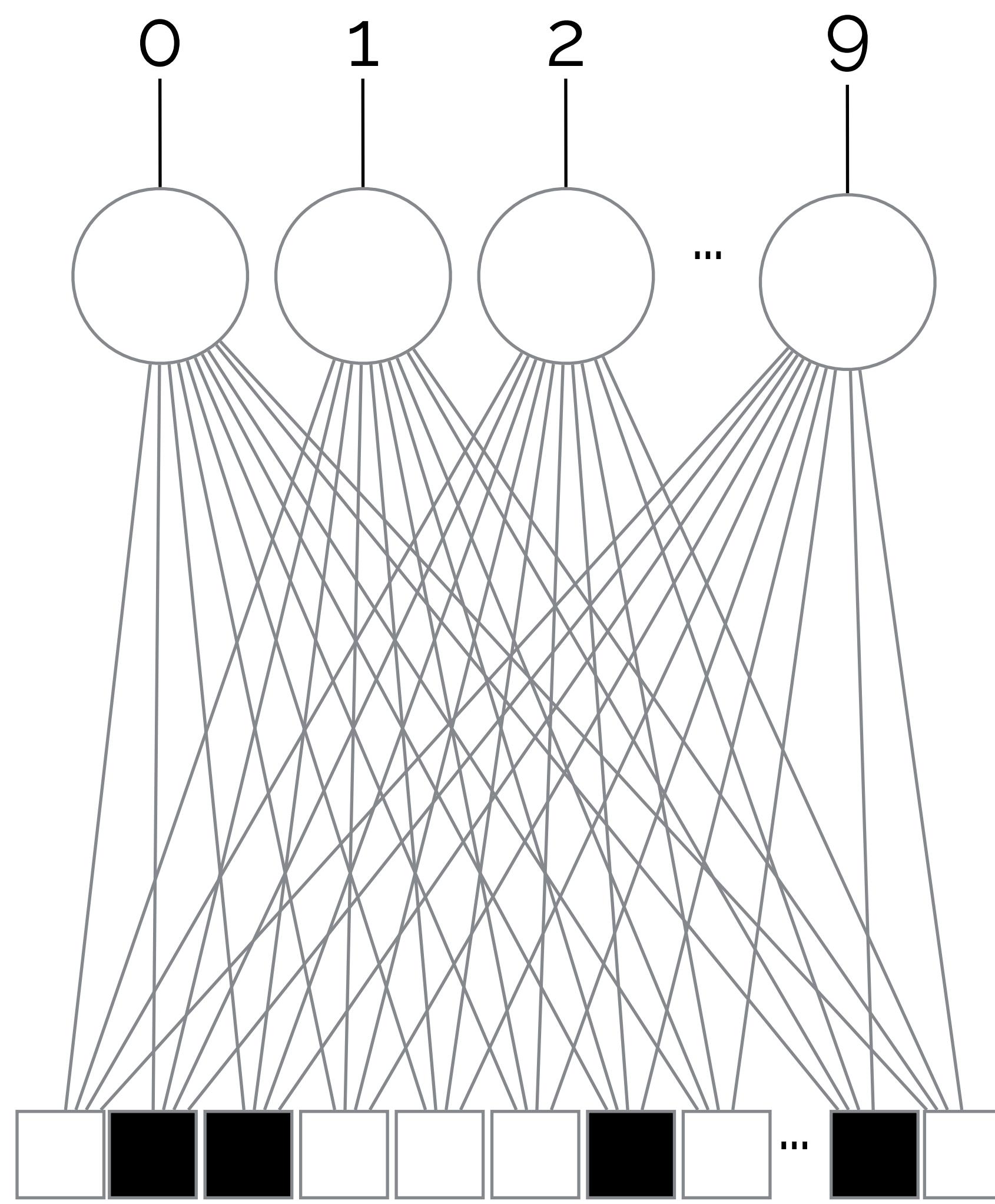


1 1 5 4 3
7 5 3 5 3
5 5 9 0 6
3 5 2 0 0





28x28

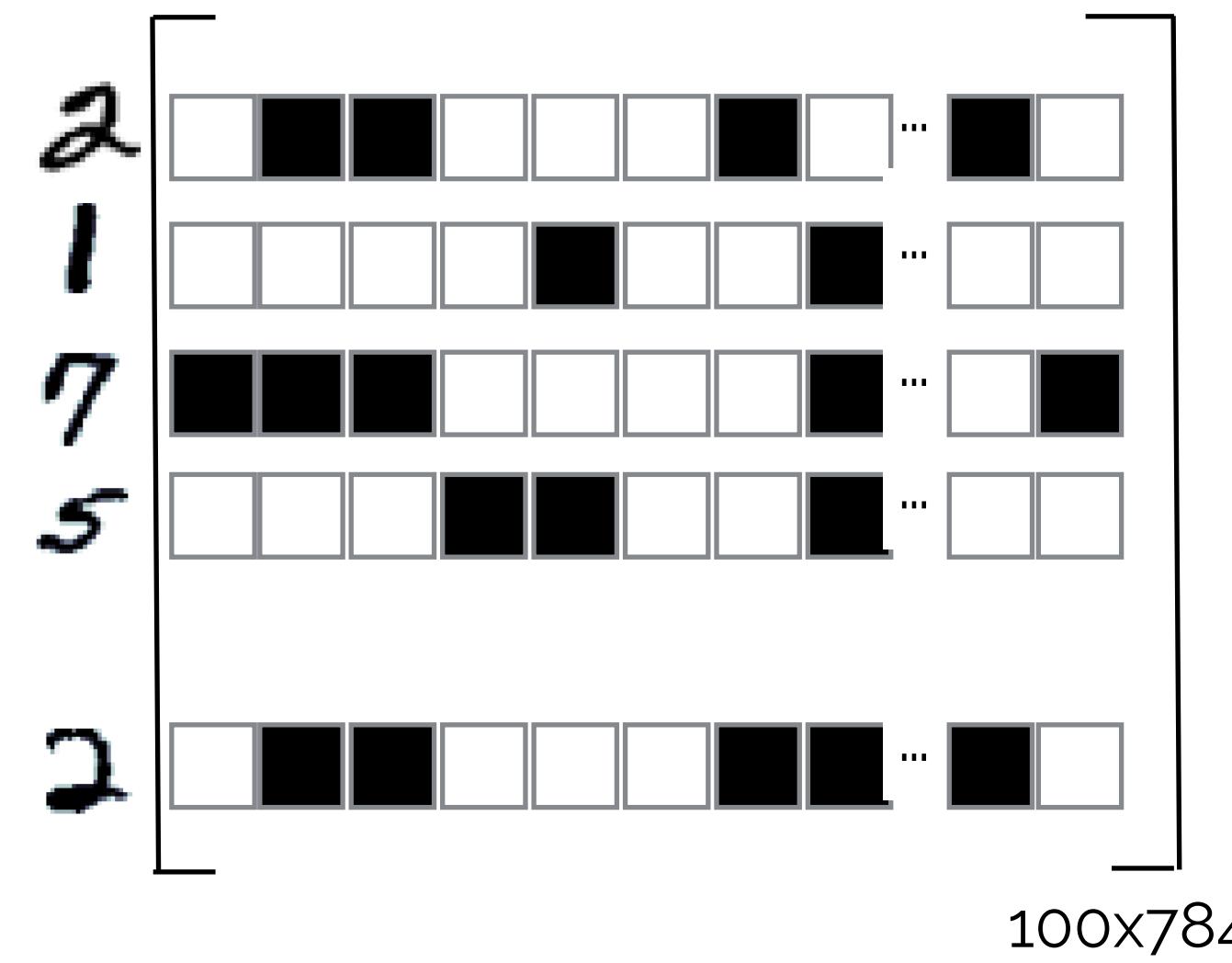


784 data points



$$\text{softmax}(L_n) = \frac{e^{L_n}}{\|e^L\|}$$





$$* \begin{bmatrix} w_{0,0} & w_{0,1} & w_{0,2} & \dots & w_{0,9} \\ w_{1,0} & w_{1,1} & w_{1,2} & \dots & w_{1,9} \\ \cdot & \cdot & \cdot & \dots & \cdot \\ w_{783,0} & w_{783,1} & w_{783,2} & \dots & w_{783,9} \end{bmatrix}_{784 \times 10} + [b_0 \ b_1 \ b_2 \ \dots \ b_9]$$

$$L = X.W + b$$



$$Y = \text{softmax}(X.W + b)$$



How do you measure how good it is

Cross-entropy and many other



2

0	1	2	3	4	5	6	7	8	9
0.1	0.1	0.9	0.3	0.2	0.2	0.1	0.4	0.2	0.2

0	1	2	3	4	5	6	7	8	9
0	0	1	0	0	0	0	0	0	0

$$CrossEntropy = - \sum (Y_i \cdot \log Y_i)$$



Let's demo it!



Y'all need fancier stuff

Multiple layers, different activation/loss functions, ...
Convolution, Recurrent and many others



www.amsterdam.ai

[AMSTERDAM AI]

WHEN IoT GETS AN AI BRAIN - 28 FEBRUARY @ DELOITTE EDGE





Q&A

@thiagoavadore
thiago.de.faria@linkit.nl



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