

AUTOMATIC GENERATION OF SECURE NEURAL NETWORK MODELS WITH HOMOMORPHIC ENCRYPTION

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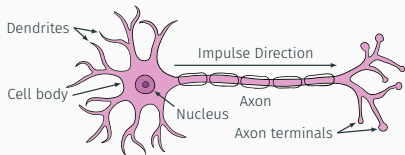
INTRODUCTION

The demand for machine learning has grown significantly over the past decade, being fueled by the development of new learning techniques and the ability to leverage hardware acceleration.

This is allowing the implementation of deeper architectures that can reason about increasingly complex problems.

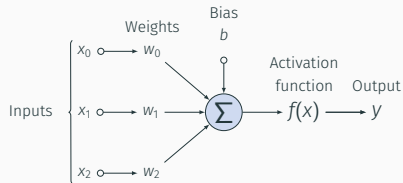
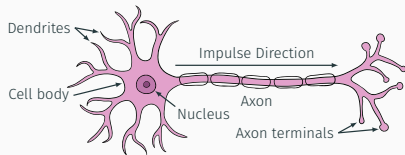
NEURAL NETWORKS

NEURON MODEL



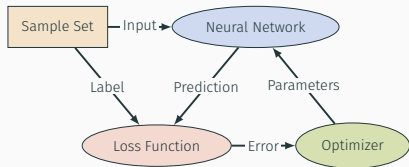
- Biological neurons receive inputs on their synapses and emits an output that is dependent on the input strength.

NEURON MODEL

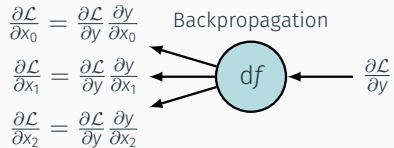
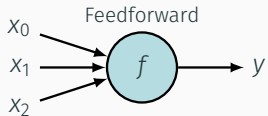


- Biological neurons receive inputs on their synapses and emits an output that is dependent on the input strength.
- An artificial neuron output is modeled as the linear combination of an input vector with a weight vector, added to a bias term and applied into a non-linear activation function.

NETWORK TRAINING



BACKPROPAGATION



TITLEFORMATS

METROPOLIS supports 4 different titleformats:

- Regular
- SMALLCAPS
- ALLSMALLCAPS
- ALLCAPS

They can either be set at once for every title type or individually.

ELEMENTS

*The theme provides sensible defaults to
\emph{emphasize} text, \alert{accent} parts
or show \textbf{bold} results.*

becomes

The theme provides sensible defaults to *emphasize* text, **accent** parts or show **bold** results.

FONT FEATURE TEST

- Regular
- *Italic*
- SMALLCAPS
- Bold
- *Bold Italic*
- BOLD SMALLCAPS
- *Monospace*
- *Monospace Italic*
- Monospace Bold
- *Monospace Bold Italic*

Items

- Milk
- Eggs
- Potatos

Enumerations

1. First,
2. Second and
3. Last.

Descriptions

PowerPoint Meeh.

Beamer Yeeeha.

- This is important

- This is important
- Now this

- This is important
- Now this
- And now this

- This is really important
- Now this
- And now this

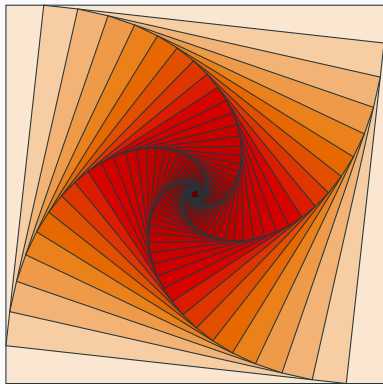


Figure 1: Rotated square from texample.net.

Table 1: Largest cities in the world (source: Wikipedia)

City	Population
Mexico City	20,116,842
Shanghai	19,210,000
Peking	15,796,450
Istanbul	14,160,467

Three different block environments are pre-defined and may be styled with an optional background color.

Default

Block content.

Alert

Block content.

Example

Block content.

Default

Block content.

Alert

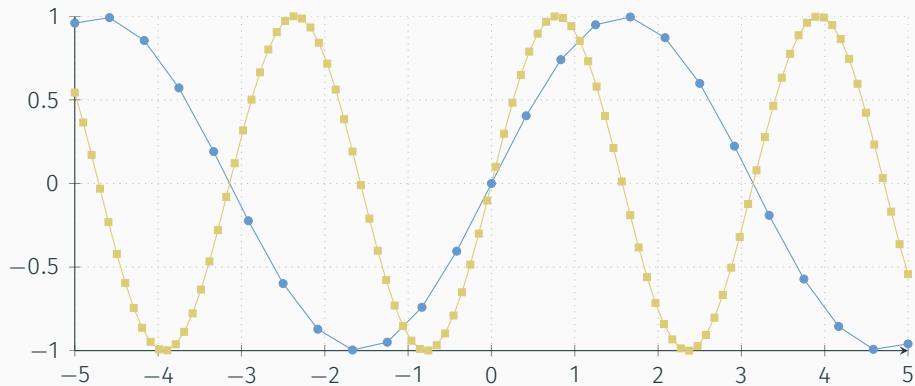
Block content.

Example

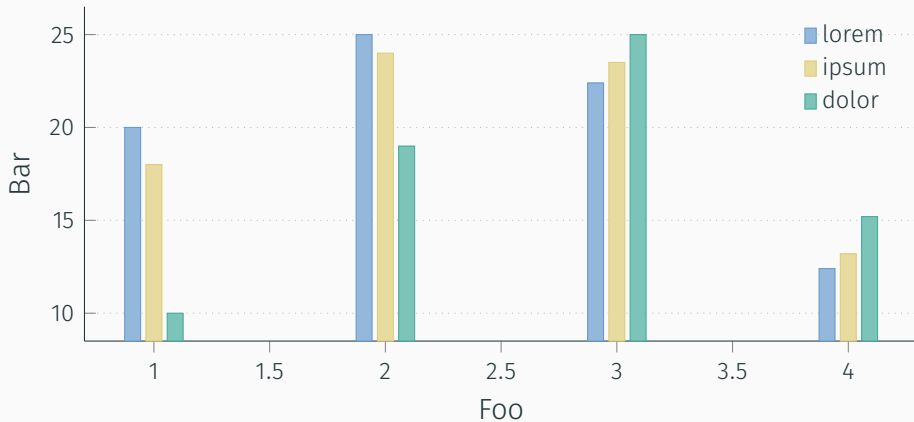
Block content.

$$e = \lim_{n \rightarrow \infty} \left(1 + \frac{1}{n}\right)^n$$

LINE PLOTS



BAR CHARTS



Veni, Vidi, Vici

METROPOLIS defines a custom beamer template to add a text to the footer. It can be set via

```
\setbeamertemplate{frame footer}{My custom footer}
```

CONCLUSION

Get the source of this theme and the demo presentation from

github.com/matze/mtheme

The theme *itself* is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.

QUESTIONS?