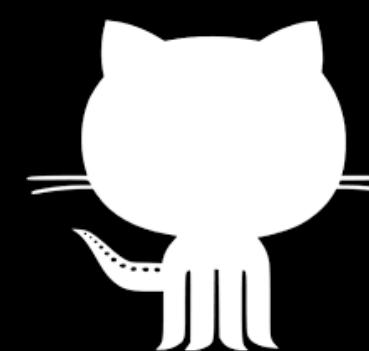


TensorFlow and Go

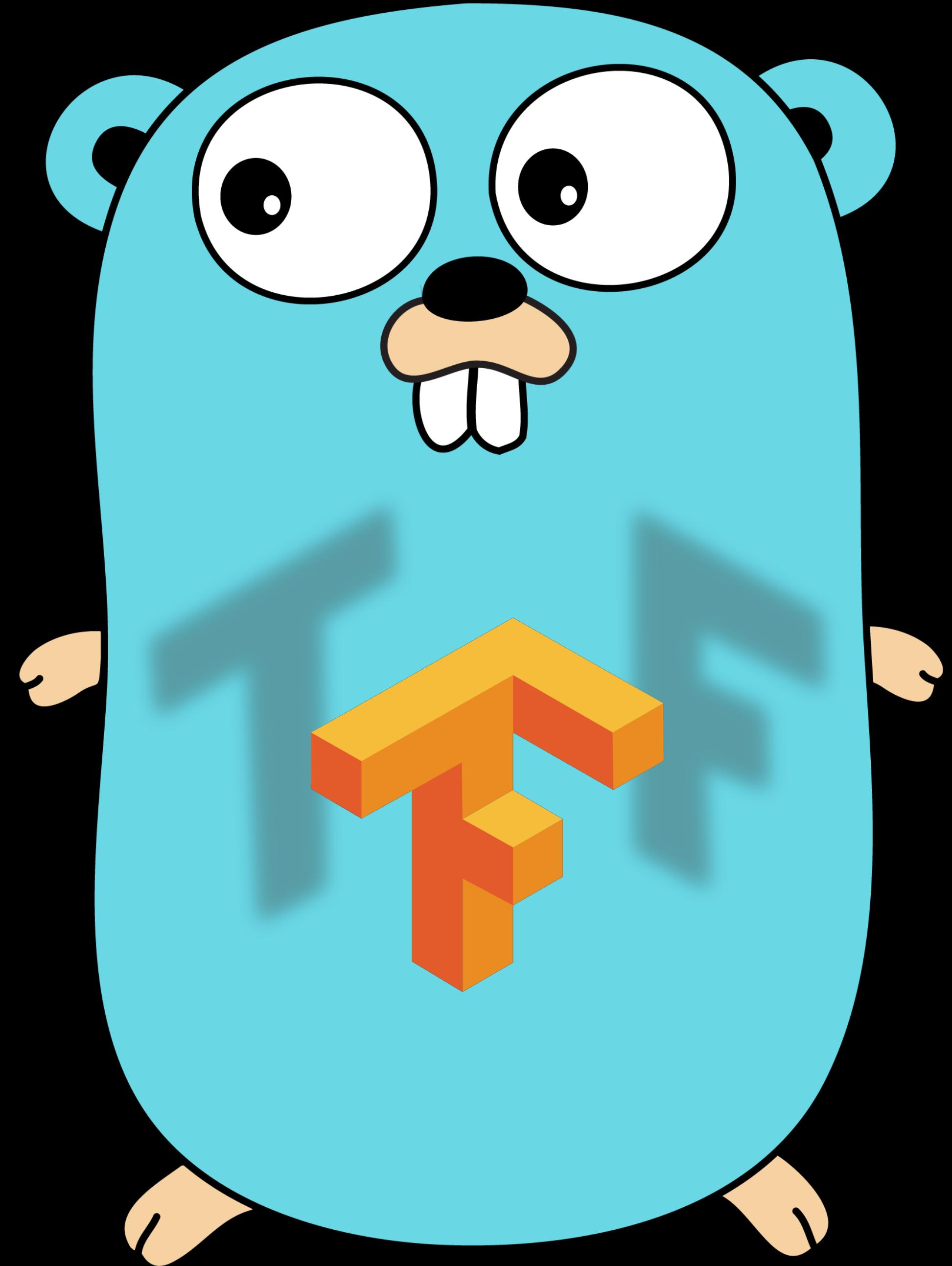
Natalie Pistunovich



@NataliePis



pisush





TensorFlow

An end-to-end open source
machine learning platform



TensorFlow

An end-to-end open source machine learning platform



TensorFlow

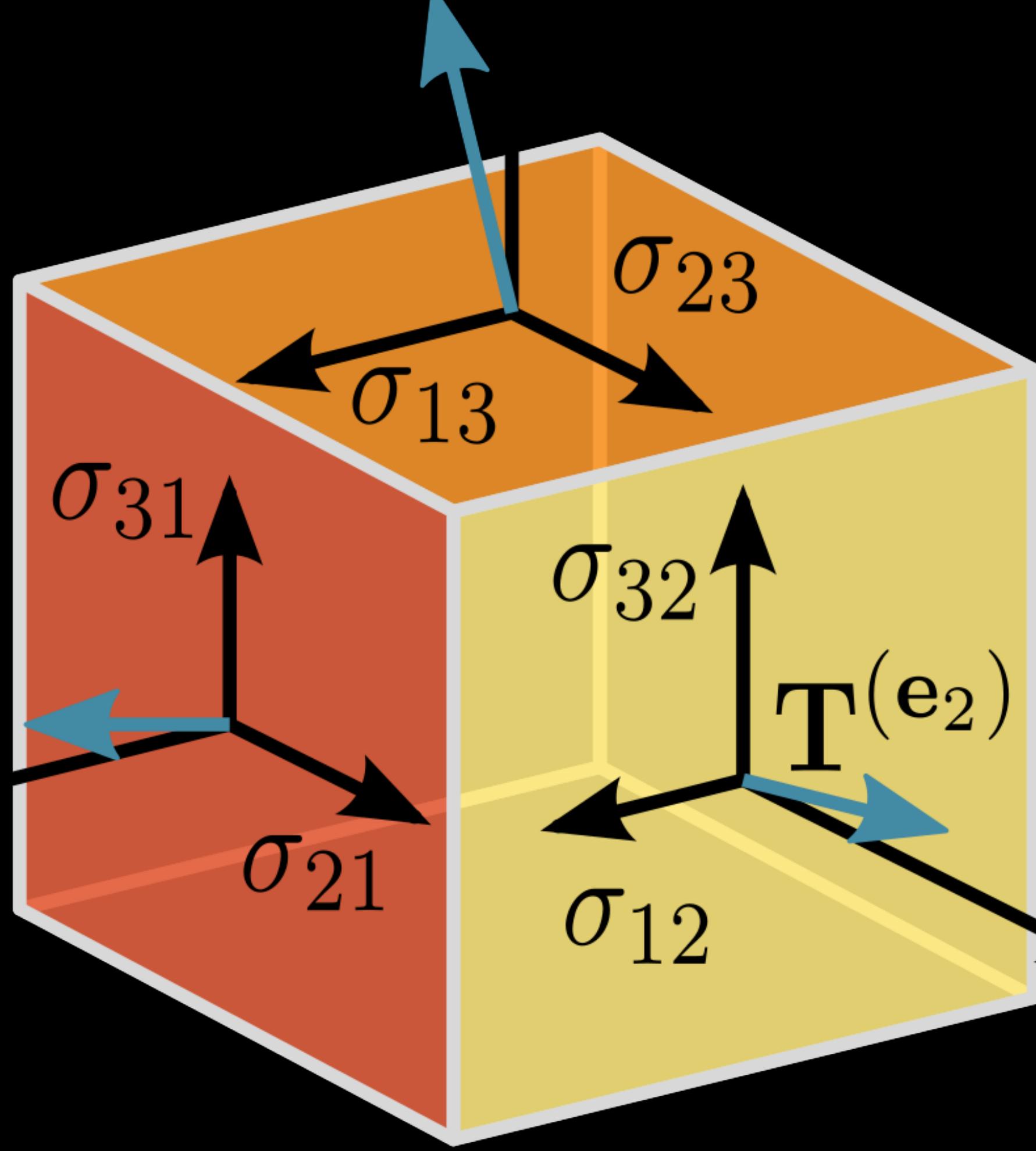
- Tensor Processing Units
on Google Cloud
- Mobile and IoT
- Serving models via
HTTP/REST/gRPC/protobuf

How to ML

1. Define the problem
2. Gather data
3. Prepare data
4. Choose a model
5. Train the model
6. Evaluate the model
7. Tune the hyperparameters
8. Predict

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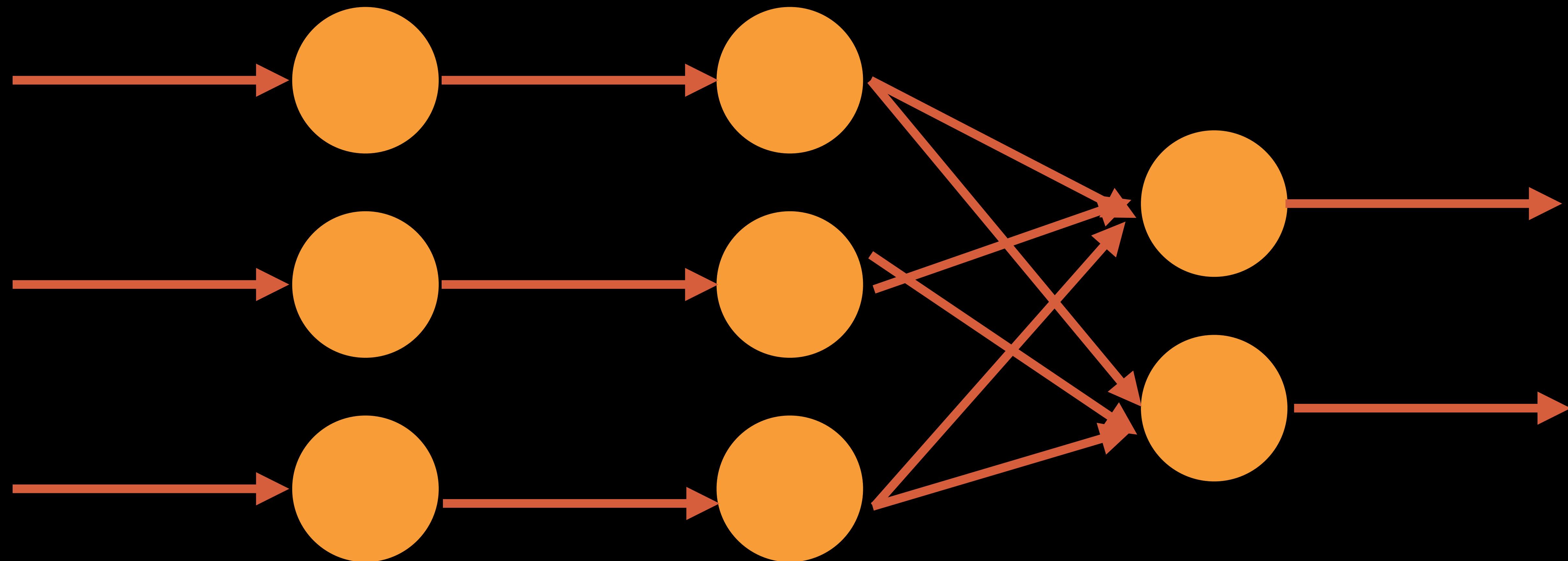


A **tensor** is a generalization of vectors and matrices to potentially higher dimensions

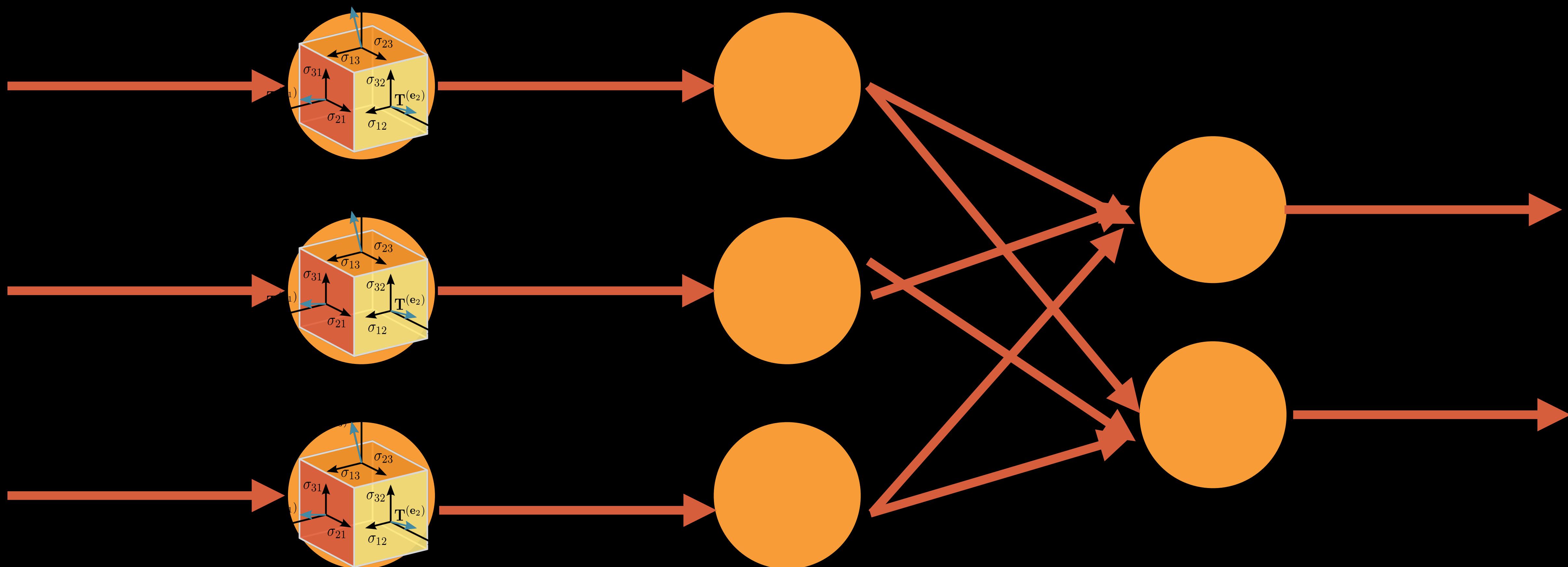
1. Data type

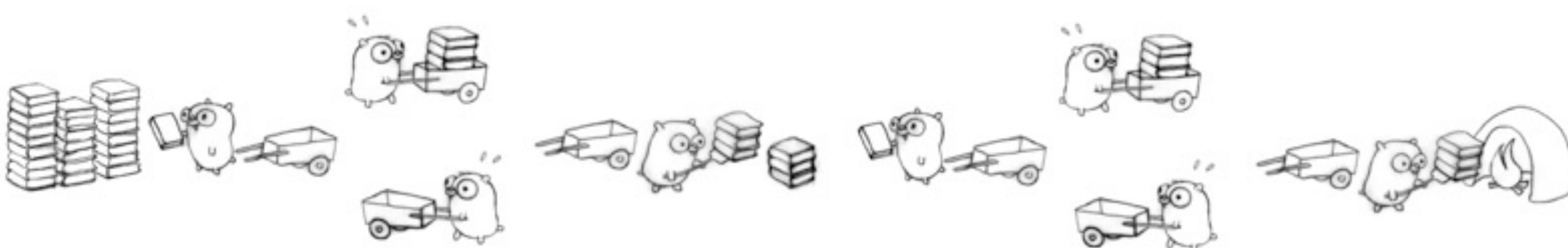
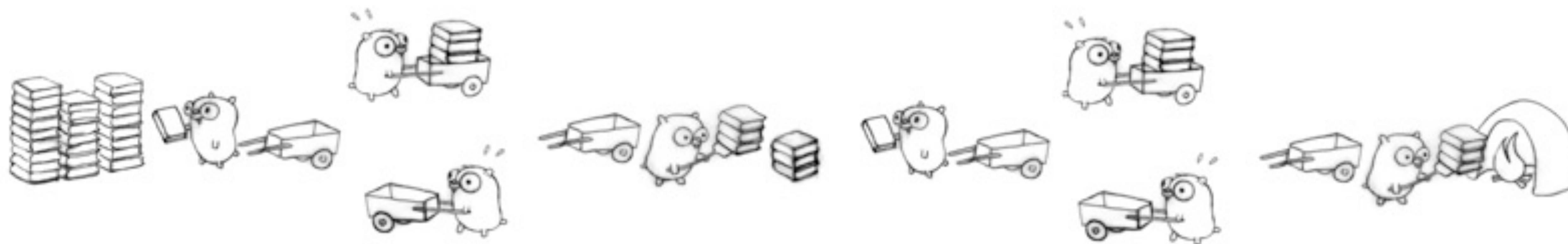
2. Shape

- Number of dimensions
- Number of values / dimension



The graph (model) is a set of nodes representing mathematical operations

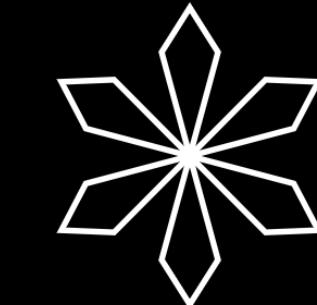
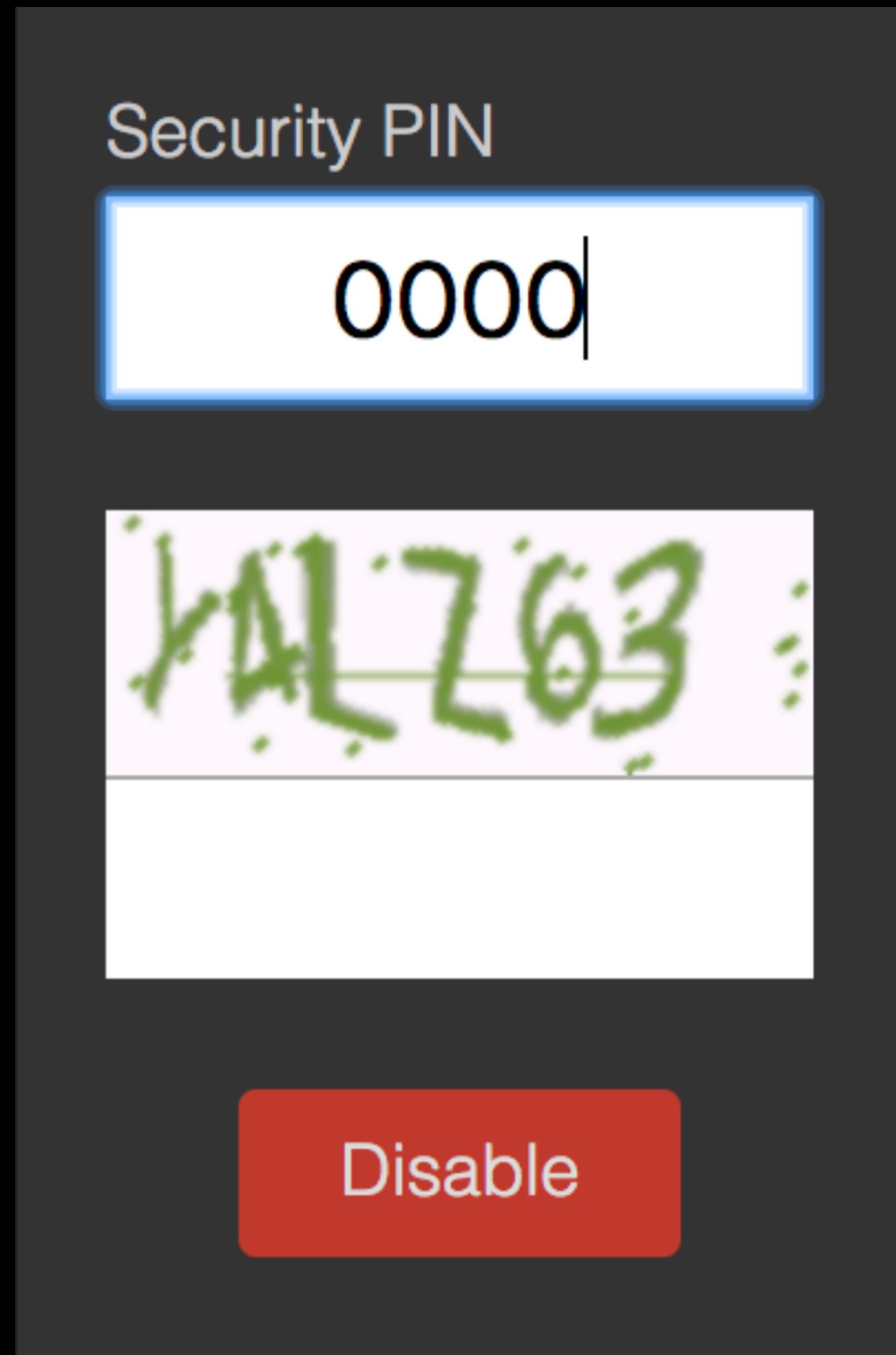






Captcha Challenge

[github.com/
pisush/
tensorflow-and-go](https://github.com/pisush/tensorflow-and-go)



BLACKLIGHT
@blacklightai

```
→ tensorflow-and-go git:(master) go run solution.go
```

```
2019-03-23 19:31:21.195591: I tensorflow/cc/saved_model/reader.cc:31] Reading Saved Model from: ./tensorflow_savedmodel_captcha
2019-03-23 19:31:21.226187: I tensorflow/cc/saved_model/reader.cc:54] Reading meta graph with tags { serve }
2019-03-23 19:31:21.258101: I tensorflow/core/platform/cpu_feature_guard.cc:141] Your CPU supports instructions that this TensorFlow binary was not compiled to use: SSE4.2 AVX AVX2 FMA
2019-03-23 19:31:21.307447: I tensorflow/cc/savedModel bundle.
2019-03-23 19:31:21.307495: I tensorflow/cc/saved SavedModel has no variables; no checkpoints were found in ./tensorflow_savedmodel_captcha/variables/variables.
2019-03-23 19:31:21.307503: I tensorflow/cc/savedOp with key legacy_init_op on SavedModel bundle.
2019-03-23 19:31:21.307515: I tensorflow/cc/saved_model/loader.cc:259] SavedModel loader tags { serve }; Status: success. Took 111941 microseconds.
```

UWAGDJ

```
tensorflow-and-go git:(master) ┌
```

Overview

Implementations

TensorFlow.js

Swift

Go

Haskell

▶ Community Supported

Resources

Hub

Probability

Serving

TFX

TensorFlow > API r1.13 > More...



API Documentation

TensorFlow has APIs available in several languages both for constructing and executing a TensorFlow graph. The Python API is at present the most complete and the easiest to use, but other language APIs may be easier to integrate into projects and may offer some performance advantages in graph execution.

A word of caution: the APIs in languages other than Python are not yet covered by the [API stability promises](#).

- [Python](#)
- [JavaScript](#)
- [C++](#)
- [Java](#)
- [Go](#)
- [Swift \(Early Release\)](#)

We encourage the community to develop and maintain support for other languages with the [approach recommended by the TensorFlow maintainers](#). For example, see the bindings for:

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- [Haskell](#),
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- [Rust](#), and

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[More details](#)

OK

Scala.

We also provide the C++ API reference for TensorFlow Serving:

Overview

TensorFlow > API r2.0 > More...



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[Scala](#).

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[More details](#)

OK

Scala.

We also provide the C++ API reference for TensorFlow Serving:

2.0

Alpha



package tensorflow

```
import "github.com/tensorflow/tensorflow/tensorflow/go"
```

Package tensorflow is a Go binding to TensorFlow.

The API is subject to change and may break at any time.

TensorFlow (www.tensorflow.org) is an open source software library for numerical computation using data flow graphs. This package provides functionality to build and execute such graphs and depends on TensorFlow being available. For installation instructions see <https://www.tensorflow.org/code/tensorflow/go/README.md>

Example

Index

func Version() string

type Consumer

- func (p Consumer) DataType() DataType
- func (p Consumer) Producer() Output

type Context

- func NewContext(options *ContextOptions) (*Context, error)
- func (c *Context) ListDevices() ([]Device, error)

type ContextOptions

type DataType

type Device

- func (d Device) String() string

type Graph

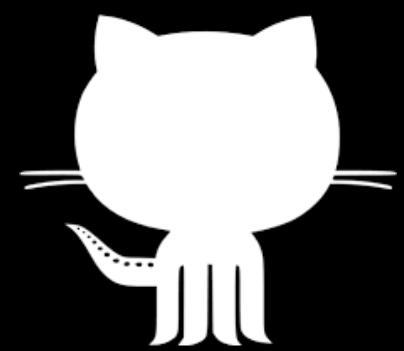
- func NewGraph() *Graph
- func (g *Graph) AddGradients(prefix string, y []Output, x []Output, dx []Output) ([]Output, error)
- func (g *Graph) AddOperation(args OpSpec) (*Operation, error)
- func (g *Graph) Import(def []byte, prefix string) error
- func (g *Graph) ImportWithOptions(def []byte, options GraphImportOptions) error
- func (g *Graph) Operation(name string) *Operation
- func (g *Graph) Operations() []Operation
- func (g *Graph) WriteTo(w io.Writer) (int64, error)



Thank You!



@NataliePis



pisush

