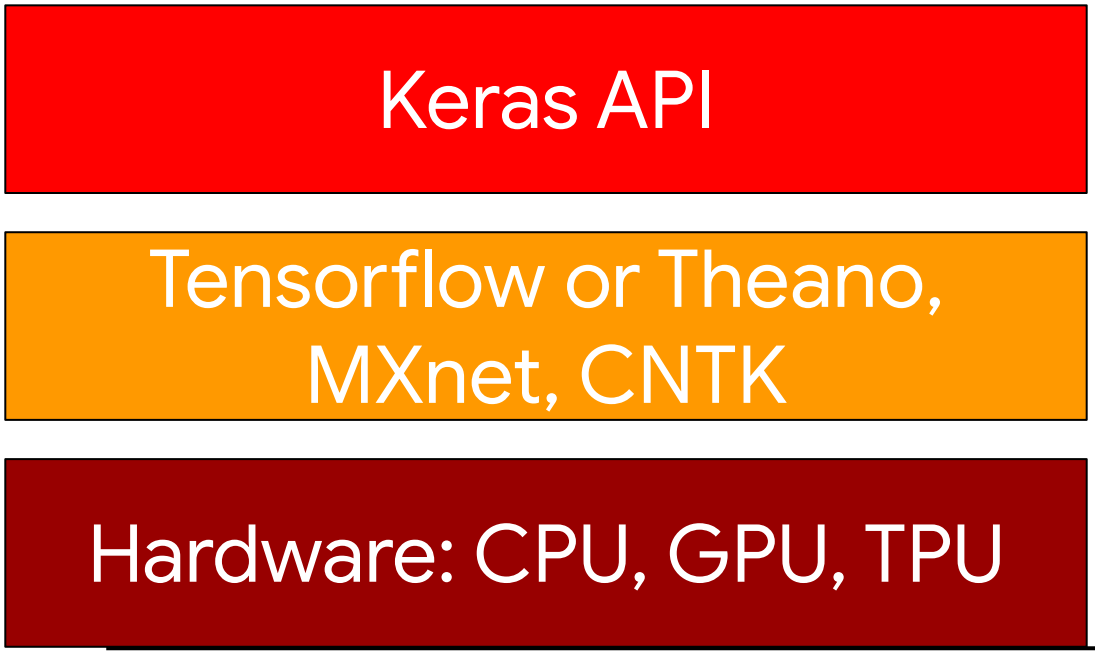
Intro to Keras

Outline

- What is Keras
- How to use Keras
- Advanced Examples
- Upcoming improvements
- Examples and Tutorials

Keras: API for specifying & training differentiable programs (deep learning for humans)



Official high-level API of Tensorflow

- Tensorflow specific functionality
  - Eager execution
  - tf.data pipelines
  - Estimators
- Does not sacrifice flexibility and performance

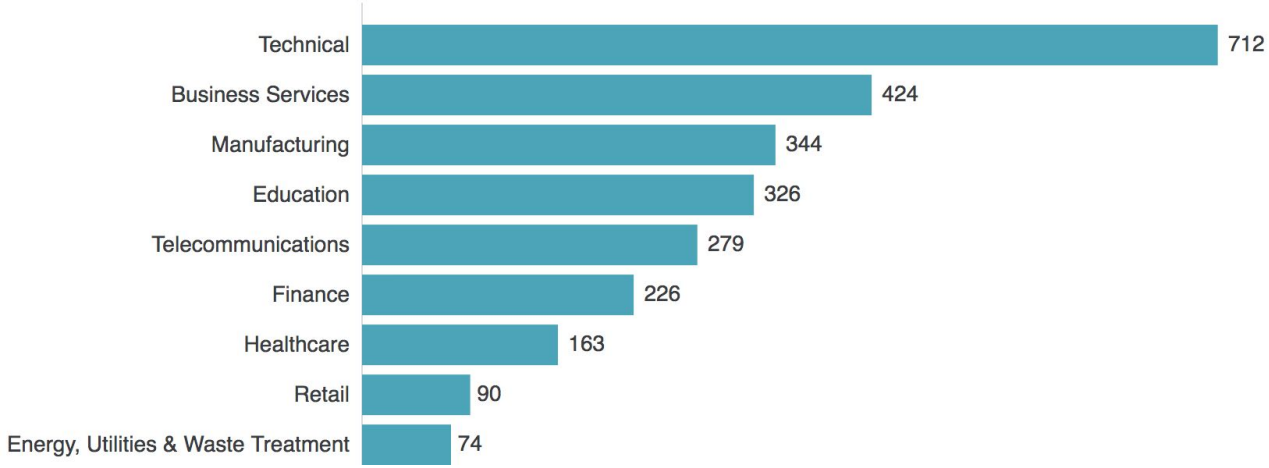
```
[2]  import tensorflow as tf
     from tensorflow.keras import layers

     print(tf.VERSION)
     print(tf.keras.__version__)
```

```
1.13.0-rc1
2.2.4-tf
```

Who makes/uses k

776 contributors

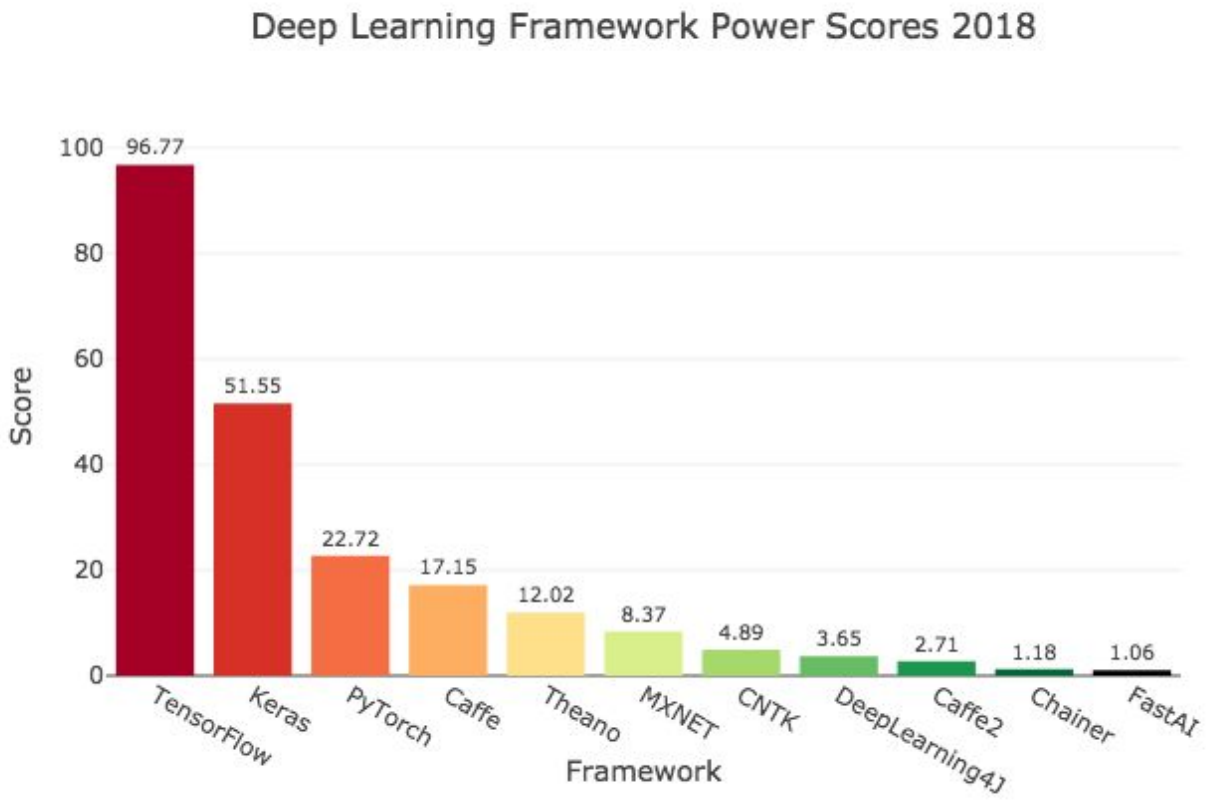


NETFLIX NVIDIA CERN vm aws UBER Microsoft AT&T Google

COMPANIES WE TRACK USING KERAS

3,623 +60.50% 12 MONTHS CHANGE

https://discovery.hgdata.com/product/keras



Criteria

- Online job listings
- KDnuggets usage survey
- Google search volume
- Medium articles
- Amazon books
- arXiv articles
- Github activity

Deep learning for real life

- Android tensorflow runtime
- iOS CoreML
- Keras.js and WebDNN GPU accelerated JS runtimes
- Google Cloud via tensorflow serving - ML engine
- Web backend in Flask
- JVM in DL4J
- Raspberry Pi

Start Using Keras in seconds

- Access Google Colabs from any gmail address
- Start a Jupyter Notebook from Tensorflow docker
- Regular python download

```
# Current release for CPU-only
$ pip install tensorflow

# Nightly build for CPU-only (unstable)
$ pip install tf-nightly

# GPU package for CUDA-enabled GPU cards
$ pip install tensorflow-gpu

# Nightly build with GPU support (unstable)
$ pip install tf-nightly-gpu
```

Demo

- Model types
  - Sequential
  - Functional
  - Model Subclassing
- Visualize model
  - Summary
  - Plot_model
- Extra features
  - Use model
  - tf.data
  - Custom layers
  - Callbacks
  - Saving and restoring model
  - Pretrained Models

Upcoming Features (very soon)

- Eager execution
- Distributed training - tensorflow like performance
  - Parameter strategies
- Tight integration to build and productionize
  - Export to tf life and tfx
- Better tensorboard integration (profiler, displaying graph correctly)
- Canned models
- Improved performance