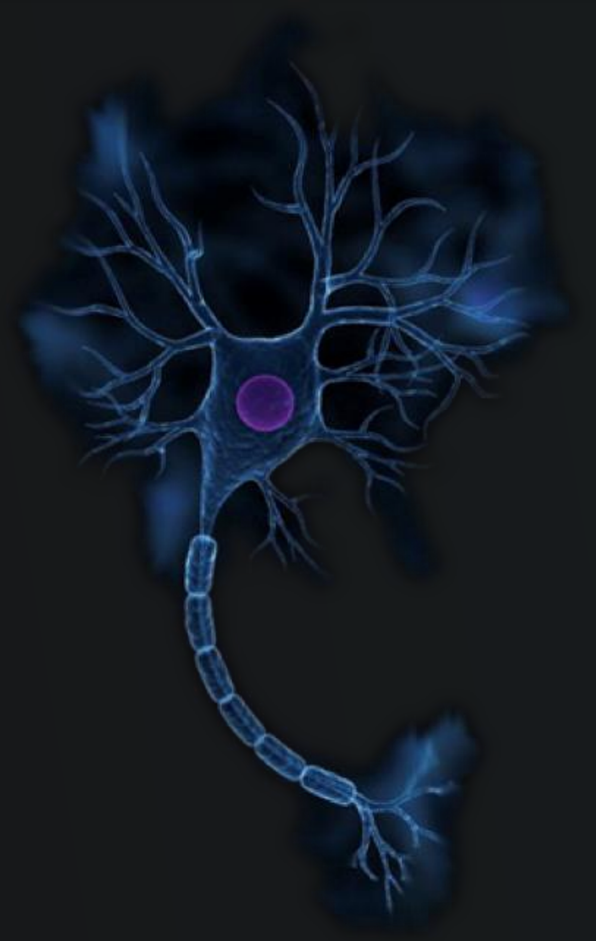
Neural Networks Package

OctConf 2017 - CERN

Francesco Faccio

Artificial Neuron

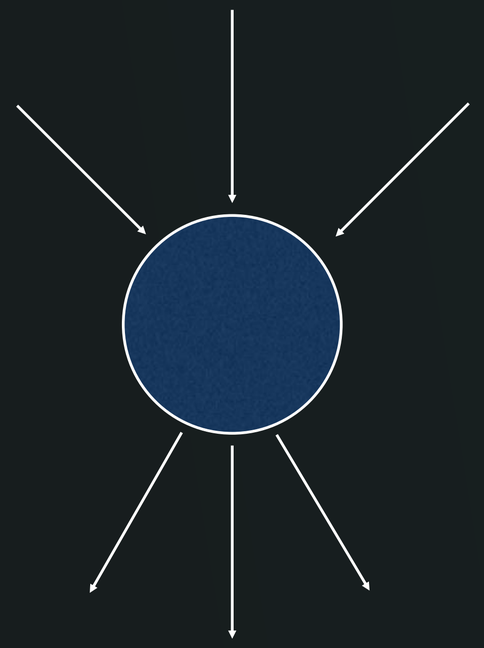


Biological neuron

Dendrites

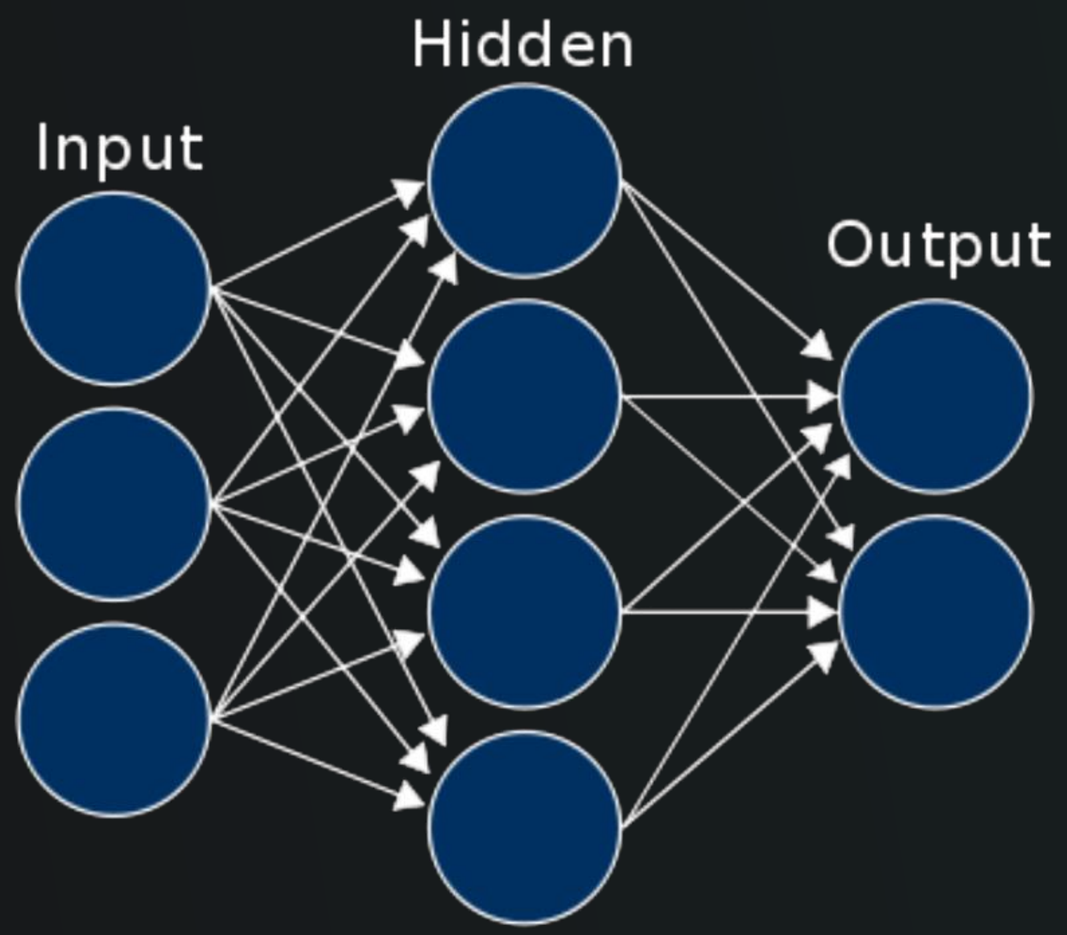
Cell body

Axon

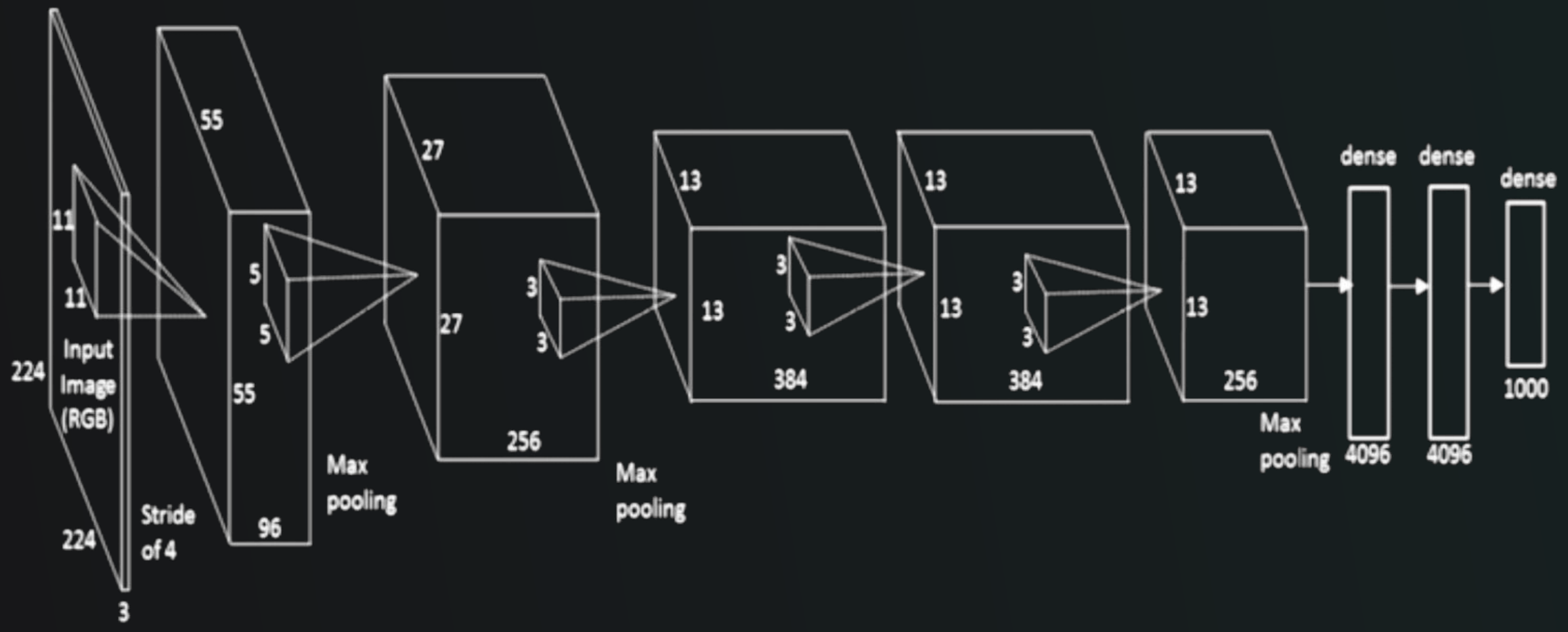


Artificial neuron

Neural Network



Deep Neural Network: Alexnet



Visualizing a Neural Network

Tensorflow Playground

Applications: Deep Neural Network

Text Classification

Applications: CNN

Style transfer: photo

Image

Style

Applications: CNN

Style transfer: photo

Image

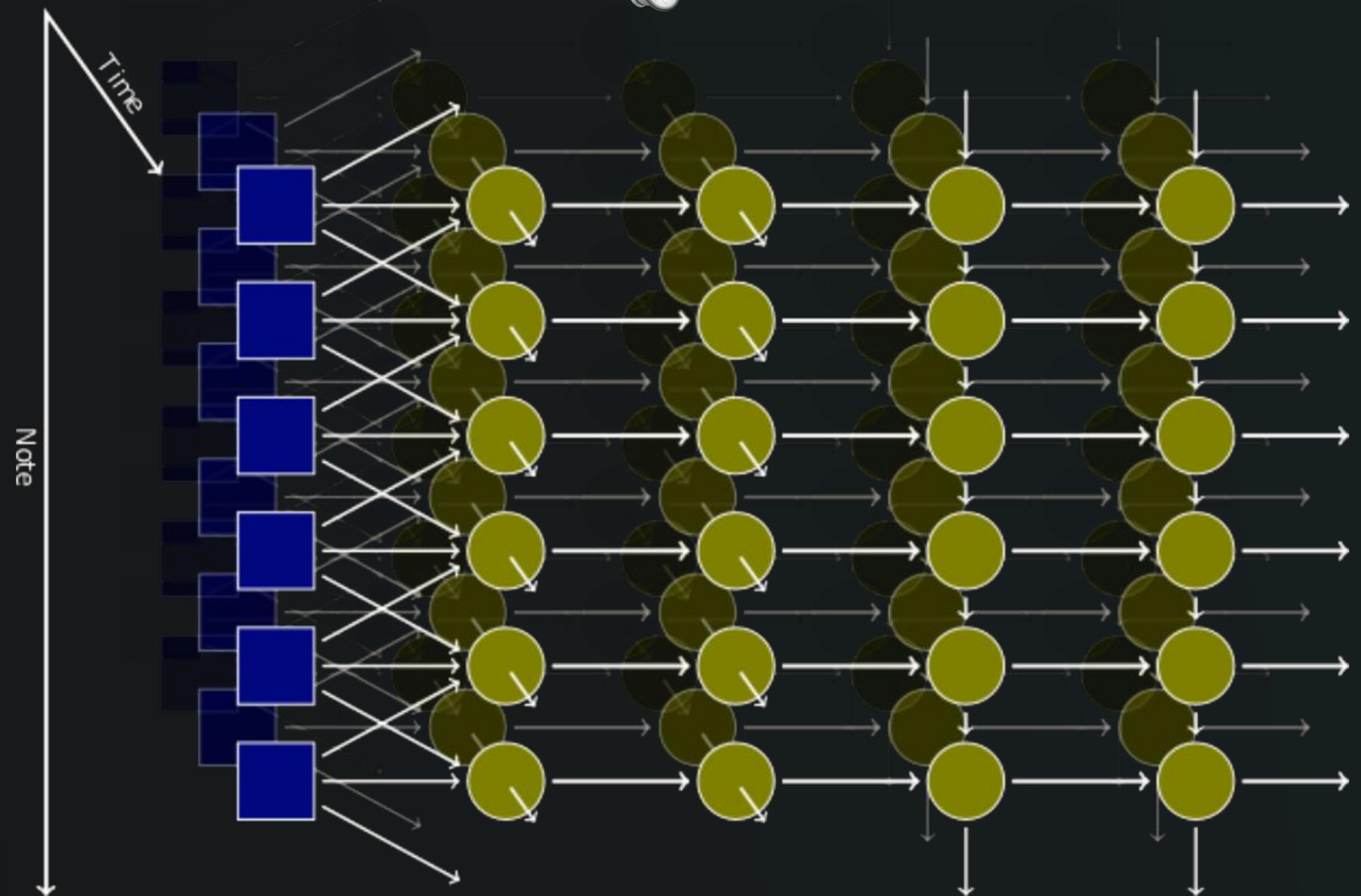
Style

Applications: CNN

Style transfer: video

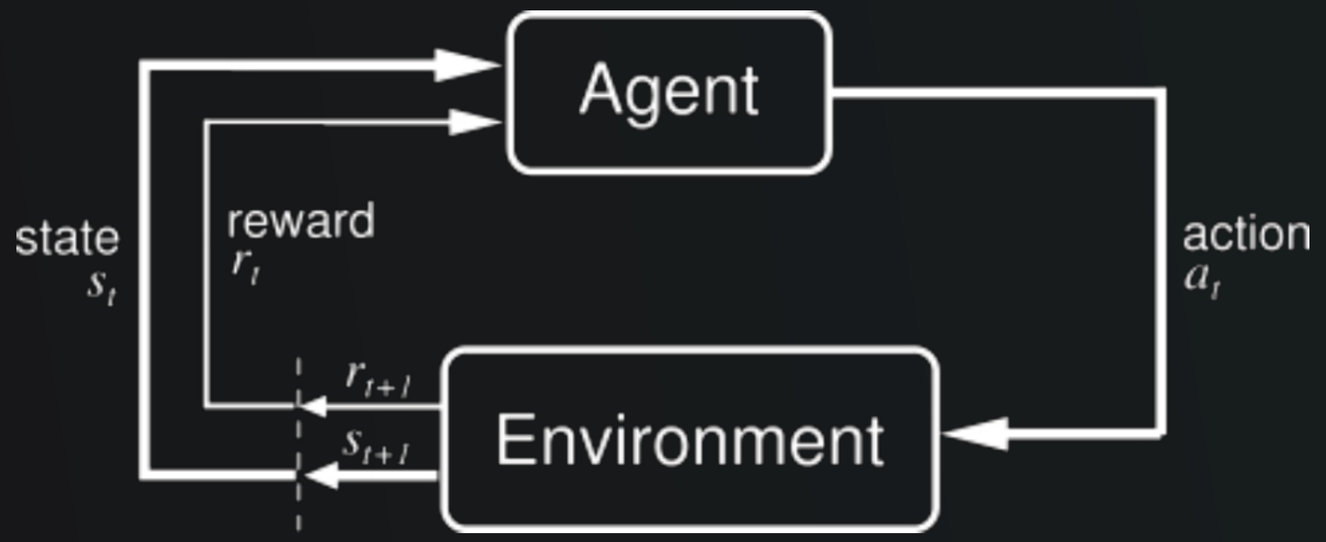
Applications: RNN

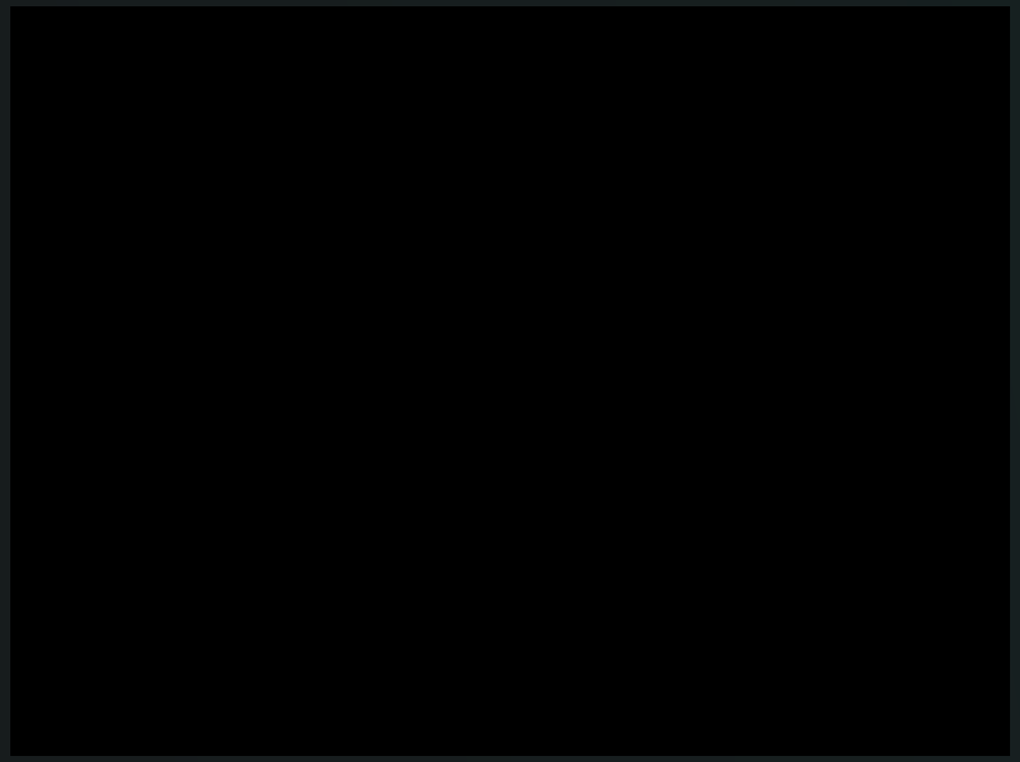
Music generation



Applications: Reinforcement Learning

Atari





Applications: CNN

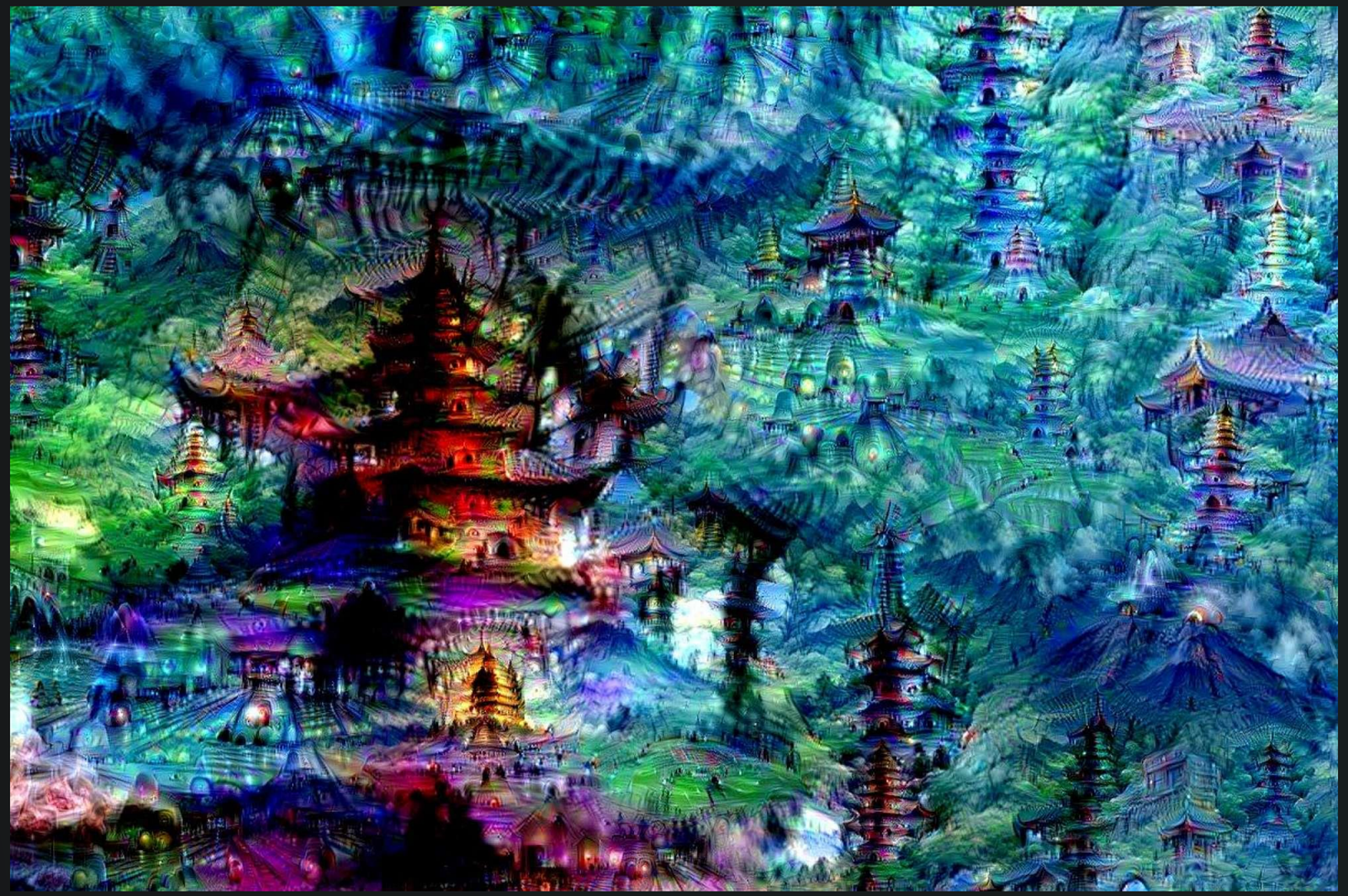
Deep Dream

Applications: CNN

Deep Dream

Applications: CNN

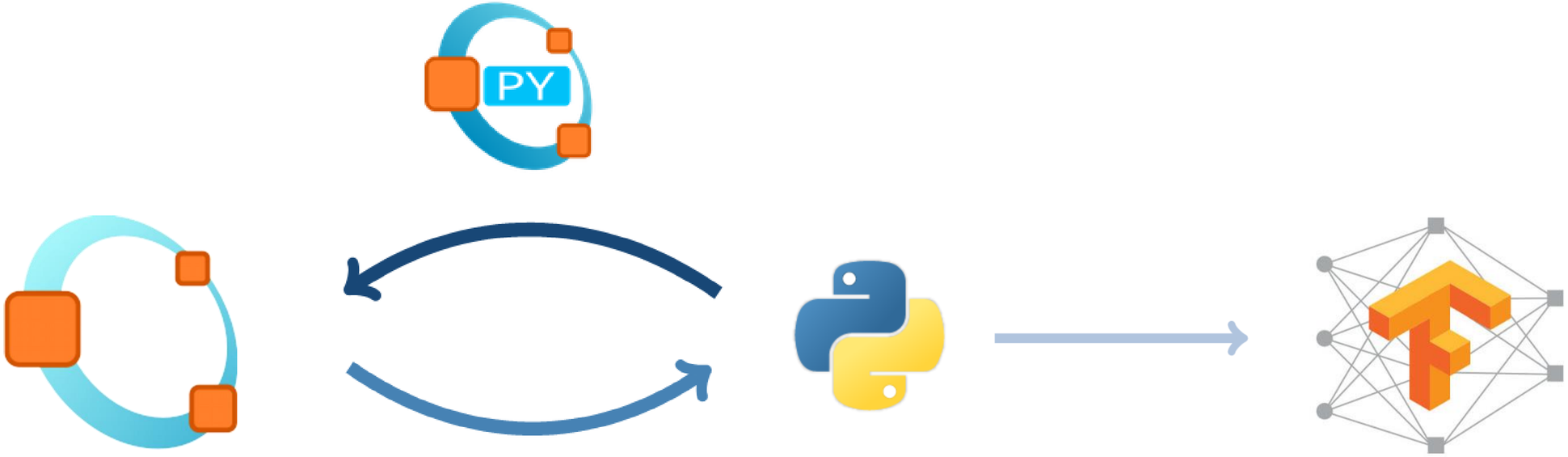
Deep Dream



Nnet Package: Matlab

- **Deep Learning**
- **Function Approximation and Nonlinear Regression**
- **Pattern Recognition and Classification**
- **Clustering**
- **Time Series and Dynamic Systems**

GSoC project



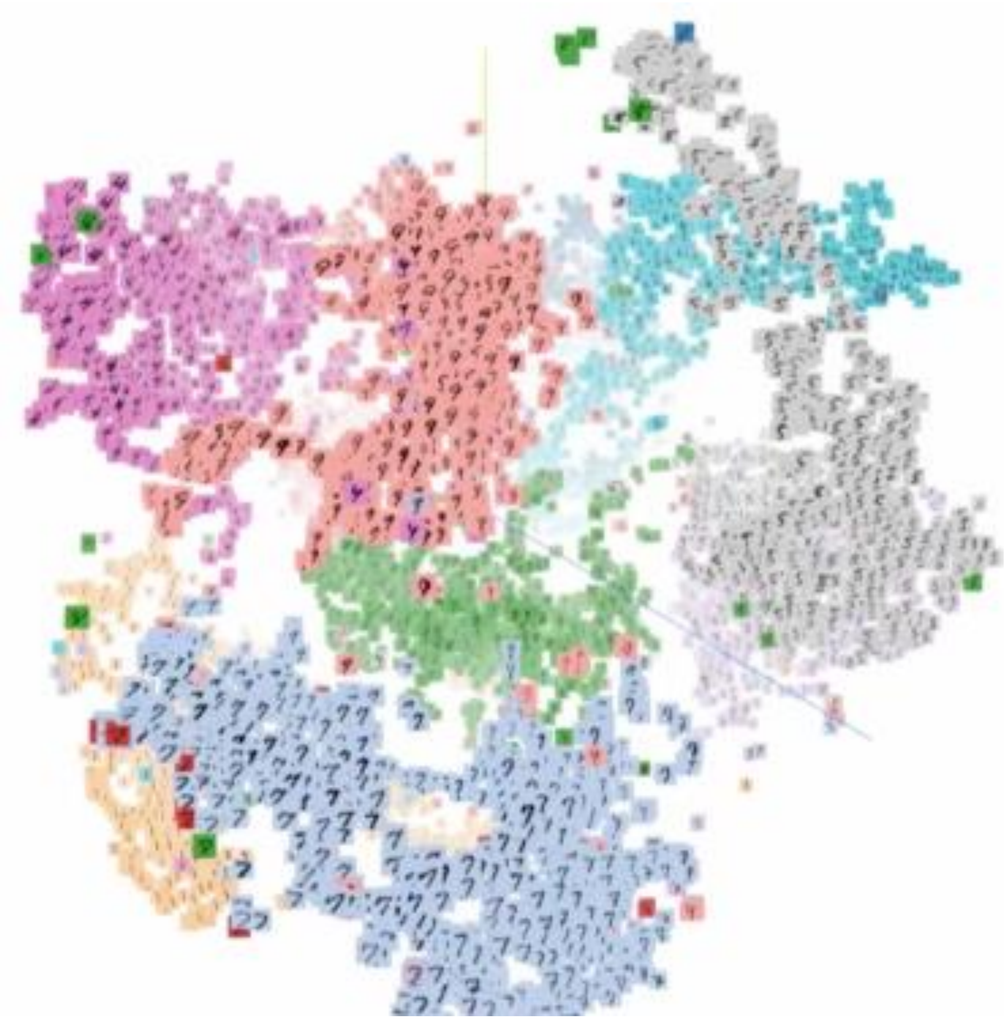
TensorFlow

- 700 contributors (400 Googlers)
- Scalable and fast
- High level Python API
- Low level C++ API

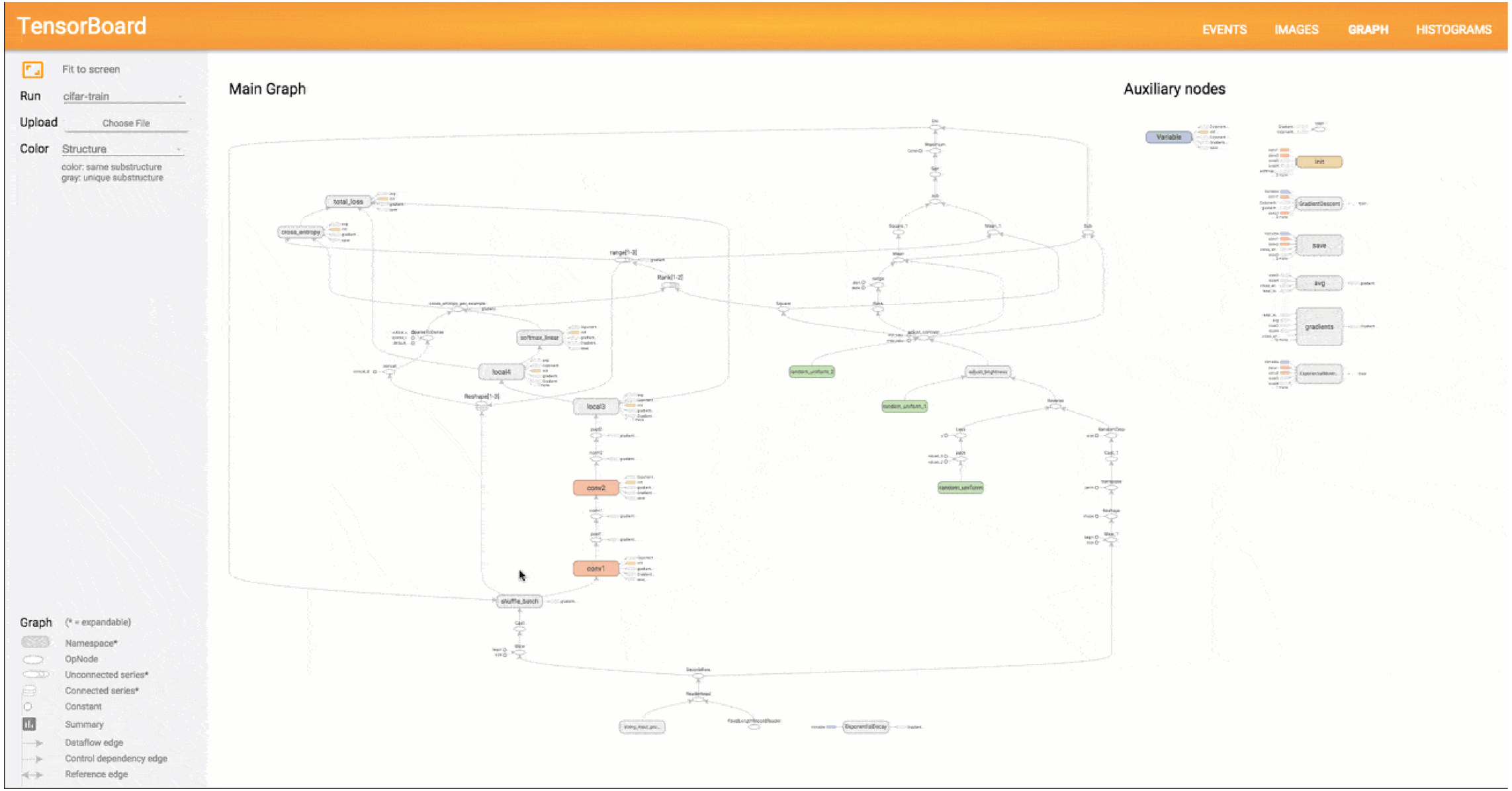
TensorFlow: Parallel

- Multiple CPU
- Multible GPU
- CUDA/CUDNN
- Cloud computing (Amazon, Hadoop, Google Cloud..)

TensorBoard

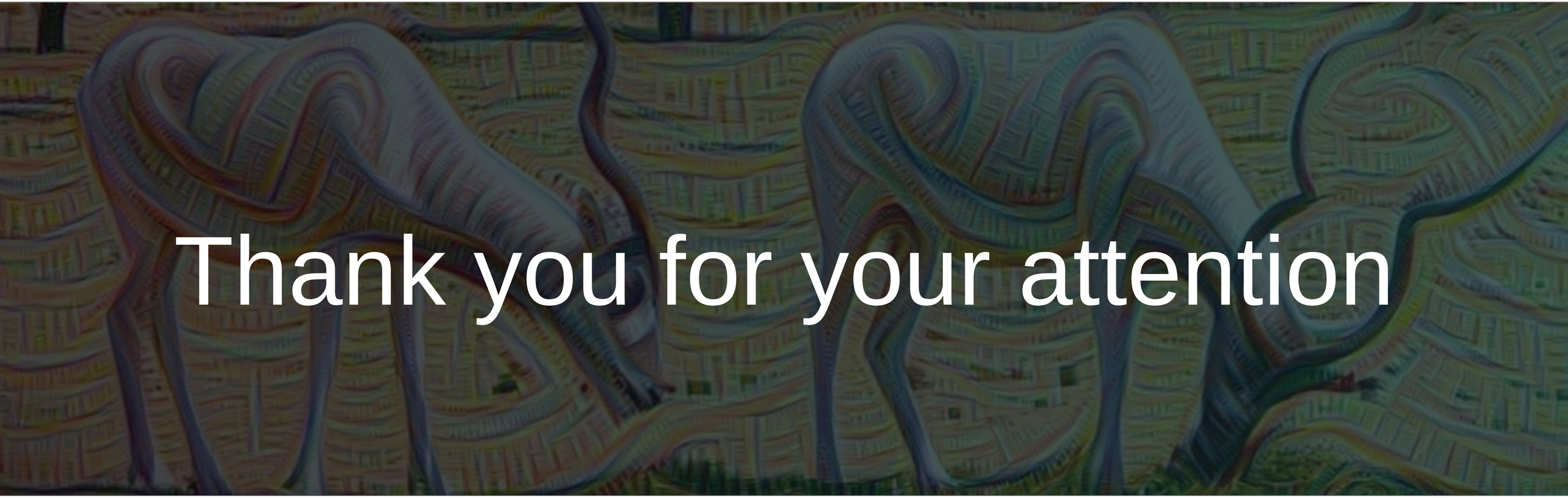


TensorBoard



Help

- Need mentors ☺
- Lot of work to do…
- But very interesting topic!!!



Thank you for your attention