

Computer Vision – TP15

Deep Learning Resources and Examples

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Outline

- Deep Learning Resources
- Examples

Topic: Deep Learning Resources

- Deep Learning Resources
- Examples

TensorFlow

TensorFlow

Install Learn API Resources Community Why TensorFlow

Search Language GitHub Sign in

Google is committed to advancing racial equity for Black communities. [See how.](#)

An end-to-end open source machine learning platform

TensorFlow For JavaScript For Mobile & IoT For Production

The core open source library to help you develop and train ML models. Get started quickly by running Colab notebooks directly in your browser.

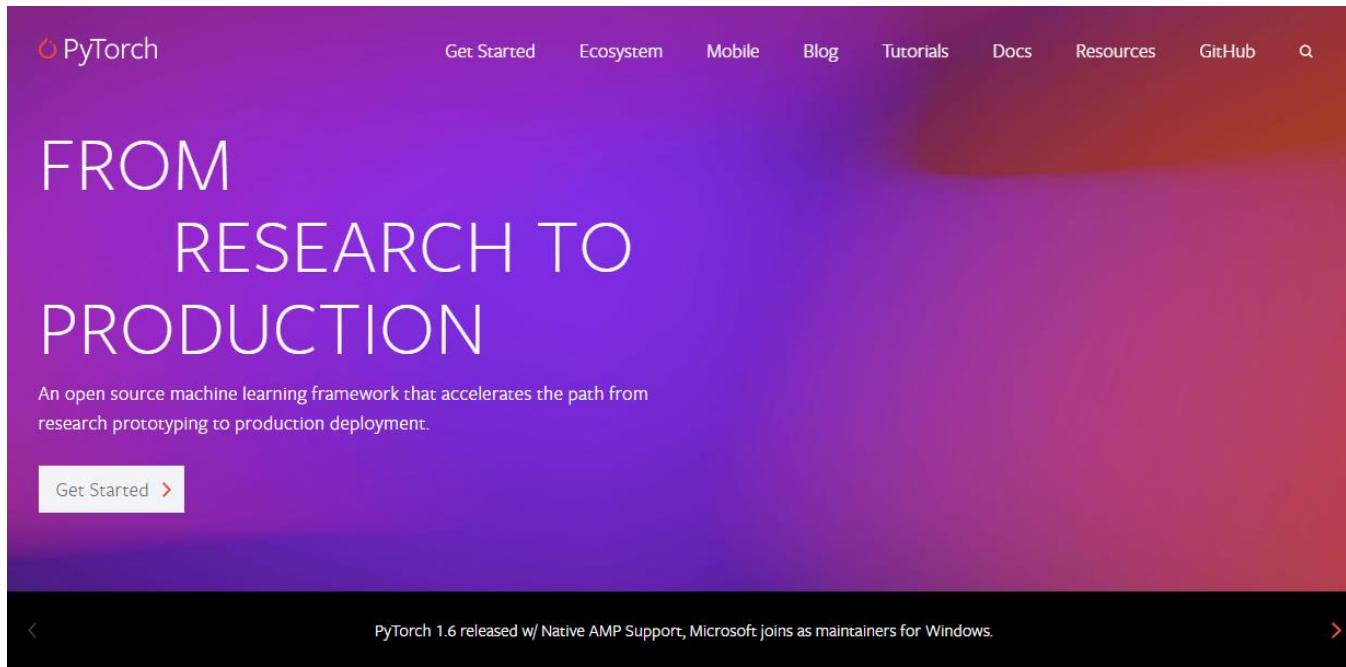
[Get started with TensorFlow](#)

Why TensorFlow

TensorFlow is an end-to-end open source platform for machine learning. It has a comprehensive.

<https://www.tensorflow.org/>

PyTorch

The image shows the top section of the PyTorch website. It features a purple-to-red gradient background. At the top left is the PyTorch logo. To the right is a navigation menu with links for 'Get Started', 'Ecosystem', 'Mobile', 'Blog', 'Tutorials', 'Docs', 'Resources', and 'GitHub', followed by a search icon. The main heading reads 'FROM RESEARCH TO PRODUCTION' in large white letters. Below this is a sub-heading: 'An open source machine learning framework that accelerates the path from research prototyping to production deployment.' A 'Get Started >' button is positioned below the text. At the bottom of the header, a black bar contains the text 'PyTorch 1.6 released w/ Native AMP Support, Microsoft joins as maintainers for Windows.' with left and right arrow icons.

KEY FEATURES &
CAPABILITIES

[See all Features >](#)

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<https://pytorch.org/>

Keras



Simple. Flexible. Powerful.

Get started

Guides

API docs

```
from tensorflow import keras
from tensorflow.keras import layers

# Instantiate a trained vision model
vision_model = keras.applications.ResNet50()

# This is our video-encoding branch using the trained vision_model
video_input = keras.Input(shape=(100, None, None, 3))
encoded_frame_sequence = layers.TimeDistributed(vision_model)(video_input)
encoded_video = layers.LSTM(256)(encoded_frame_sequence)

# This is our text-processing branch for the question input
question_input = keras.Input(shape=(100, ), dtype='int32')
embedded_question = layers.Embedding(10000, 256)(question_input)
encoded_question = layers.LSTM(256)(embedded_question)

# And this is our video question answering model:
merged = keras.layers.concatenate([encoded_video, encoded_question])
output = keras.layers.Dense(1000, activation='softmax')(merged)
video_qa_model = keras.Model(inputs=[video_input, question_input],
                             outputs=output)
```

Deep learning for humans.

Keras is an API designed for human beings, not machines. Keras follows best practices for reducing cognitive load: it offers consistent & simple APIs, it minimizes the number of user actions required for common use cases, and it provides clear & actionable error messages. It also has extensive documentation and developer guides.

<https://keras.io/>

TensorLayer

TensorLayer
stable

Search docs

- Installation
- Examples
- Contributing
- Get Involved in Research
- FAQ
- GETTING STARTED
 - Define a model
 - Advanced features
- STABLE FUNCTIONALITIES
 - API - Activations
 - API - Array Operations
 - API - Cost
 - API - Data Pre-Processing
 - API - Files
 - API - Iteration
 - API - Layers
 - API - Models
 - API - Natural Language Processing
 - API - Initializers

Docs » Welcome to TensorLayer

[Edit on GitHub](#)

Welcome to TensorLayer



Documentation Version: 2.2.2

Jun 2019 Deep Reinforcement Learning Model ZOO Release !!.

Good News: We won the Best Open Source Software Award @ACM Multimedia (MM) 2017.

TensorLayer is a Deep Learning (DL) and Reinforcement Learning (RL) library extended from Google TensorFlow. It provides popular DL and RL modules that can be easily customized and assembled for tackling real-world machine learning problems. More details can be found [here](#).

Note

If you got problem to read the docs online, you could download the repository on [GitHub](#), then go to `/docs/_build/html/index.html` to read the docs offline. The `_build` folder can be generated in `docs` using `make html`.


<https://tensorlayer.readthedocs.io/en/stable/>

Lasagne

Lasagne
latest

Search docs

- Installation
- Tutorial
- Layers
- Creating custom layers
- Development
- lasagne.layers
- lasagne.updates
- lasagne.init
- lasagne.nonlinearities
- lasagne.objectives
- lasagne.regularization
- lasagne.random
- lasagne.utils

 DATADOG

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Docs » Welcome to Lasagne

[Edit on GitHub](#)

Welcome to Lasagne

Lasagne is a lightweight library to build and train neural networks in Theano.

Lasagne is a work in progress, input is welcome. The available documentation is limited for now. The project is on [GitHub](#).

User Guide

The Lasagne user guide explains how to install Lasagne, how to build and train neural networks using Lasagne, and how to contribute to the library as a developer.

- Installation
 - Prerequisites
 - Stable Lasagne release
 - Bleeding-edge version
 - Development installation
 - GPU support
 - Docker
- Tutorial
 - Before we start
 - Run the MNIST example
 - Understand the MNIST example
 - Where to go from here

<https://lasagne.readthedocs.io/en/latest/>

Topic: Examples

- Deep Learning Resources
- **Examples**

Invited Speaker

- Slides of the invited speaker

Resources

- **Theory**

- I. Goodfellow, Y. Bengio, and A. Courville. Deep learning. Vol. 1. Cambridge: MIT press, 2016. (<https://www.deeplearningbook.org/>)

- **Survey papers**

- "Deep Learning for Visual Understanding," in IEEE Signal Processing Magazine, vol. 34, no. 6, Nov. 2017.
- A. Lucas, M. Iliadis, R. Molina and A. K. Katsaggelos, "Using Deep Neural Networks for Inverse Problems in Imaging: Beyond Analytical Methods," in IEEE Signal Processing Magazine, vol. 35, no. 1, pp. 20-36, Jan. 2018.

- **Tutorial**

- Oxford Visual Geometry Group: VGG Convolutional Neural Networks Practical (<http://www.robots.ox.ac.uk/~vgg/practicals/cnn/>)