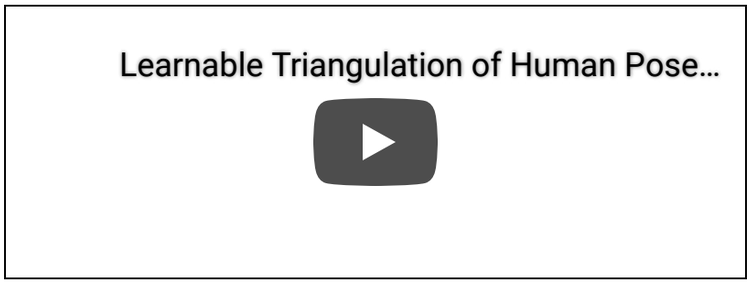


Learnable Triangulation of Human Pose

14 May 2019 • karfly/learnable-triangulation-pytorch • PYTORCH

We present two novel solutions for multi-view 3D human pose estimation based on new learnable triangulation methods that combine 3D information from multiple 2D views.

🏆 **SOTA for 3D Human Pose Estimation on Human3.6M (using extra training data)**

3D HUMAN POSE ESTIMATION

★ 274

1.18 stars / hour

Paper

Code

Weight Normalization: A Simple Reparameterization to Accelerate Training of Deep Neural Networks

NeurIPS 2016 • krasserm/wdsr • TensorFlow

We present weight normalization: a reparameterization of the weight vectors in a neural network that decouples the length of those weight vectors from their direction.

IMAGE CLASSIFICATION

★ 348

1.08 stars / hour

Paper

Code

ALBERT: A Lite BERT for Self-supervised Learning of Language Representations

26 Sep 2019 • brightmart/albert_zh • PYTORCH

Increasing model size when pretraining natural language representations often results in improved performance on downstream tasks.

🏆 SOTA for Question Answering on SQuAD2.0

LINGUISTIC ACCEPTABILITY | NATURAL LANGUAGE INFERENCE | QUESTION ANSWERING | SEMANTIC TEXTUAL SIMILARITY | SENTIMENT ANALYSIS

★ 765

1.00 stars / hour

Paper

Code

Wide Activation for Efficient and Accurate Image Super-Resolution

27 Aug 2018 • krasserm/super-resolution • TensorFlow

Keras-based implementation of WDSR, EDSR and SRGAN for single image super-resolution

IMAGE SUPER-RESOLUTION

★ 355

1.00 stars / hour

Paper

Code

Enhanced Deep Residual Networks for Single Image Super-Resolution

10 Jul 2017 • krasserm/super-resolution • TensorFlow

Recent research on super-resolution has progressed with the development of deep convolutional neural networks (DCNN).

 **#6 best model for** Image Super-Resolution on Urban100 - 4x upscaling

IMAGE SUPER-RESOLUTION

★ 355

1.00 stars / hour

Paper

Code

Photo-Realistic Single Image Super-Resolution Using a Generative Adversarial Network

CVPR 2017 • krasserm/super-resolution • TensorFlow

The adversarial loss pushes our solution to the natural image manifold using a discriminator network that is trained to differentiate between the super-resolved images and original photo-realistic images.

 **#10 best model for** Image Super-Resolution on BSD100 - 4x upscaling

IMAGE SUPER-RESOLUTION

★ 355

1.00 stars / hour

Paper

Code

Generalized Inner Loop Meta-Learning

3 Oct 2019 • facebookresearch/higher • PYTORCH

Many (but not all) approaches self-qualifying as "meta-learning" in deep learning and reinforcement learning fit a common pattern of approximating the solution to a nested optimization problem.

META-LEARNING

★ 359

1.00 stars / hour

Paper

Code

Towards Real-Time Multi-Object Tracking

27 Sep 2019 • Zhongdao/Towards-Realtime-MOT • PYTORCH

In this paper, we propose an MOT system that allows target detection and appearance embedding to be learned in a shared model.

🏆 **SOTA for Multi-Object Tracking on MOT16 (using extra training data)**

MULTI-OBJECT TRACKING

MULTIPLE OBJECT TRACKING

MULTI-TASK LEARNING

★ 284

0.99 stars / hour

Paper

Code

TorchBeast: A PyTorch Platform for Distributed RL

8 Oct 2019 • facebookresearch/torchbeast • PYTORCH

TorchBeast is a platform for reinforcement learning (RL) research in PyTorch.

★ 186

0.91 stars / hour

Paper

Code

IMPALA: Scalable Distributed Deep-RL with Importance Weighted Actor-Learner Architectures

ICML 2018 • facebookresearch/torchbeast • PYTORCH

In this work we aim to solve a large collection of tasks using a single reinforcement learning agent with a single set of parameters.

 **#2 best model for** Atari Games on Atari-57

ATARI GAMES

★ 186

0.91 stars / hour

Paper

Code

Scalable Dictionary Classifiers for Time Series Classification

26 Jul 2019 • alan-turing-institute/sktime

Dictionary based classifiers are a family of algorithms for time series classification (TSC), that focus on capturing the frequency of pattern occurrences in a time series.

TIME SERIES | TIME SERIES CLASSIFICATION

★ 295

0.85 stars / hour

Paper

Code

Kornia: an Open Source Differentiable Computer Vision Library for PyTorch

5 Oct 2019 • arraiyopensource/kornia • PYTORCH

This work presents Kornia -- an open source computer vision library which consists of a set of differentiable routines and modules to solve generic computer vision problems.

CALIBRATION | EDGE DETECTION

★ 1,178

0.61 stars / hour

Paper

Code

ECA-Net: Efficient Channel Attention for Deep Convolutional Neural Networks

8 Oct 2019 • BangguWu/ECANet • PYTORCH

To overcome the paradox of performance and complexity trade-off, this paper makes an attempt to investigate an extremely lightweight attention module for boosting the performance of deep CNNs.

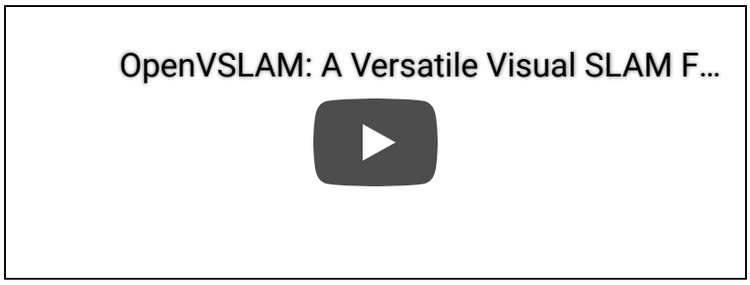
DIMENSIONALITY REDUCTION | IMAGE CLASSIFICATION | INSTANCE SEGMENTATION | OBJECT DETECTION | SEMANTIC SEGMENTATION

★ 33

0.39 stars / hour

Paper

Code



OpenVSLAM: A Versatile Visual SLAM Framework

2 Oct 2019 • xdspacelab/openvslam

In this paper, we introduce OpenVSLAM, a visual SLAM framework with high usability and extensibility.

★ 1,454

0.36 stars / hour

Paper

Code

Unified Language Model Pre-training for Natural Language Understanding and Generation

8 May 2019 • microsoft/unilm • PYTORCH

The model is pre-trained using three types of language modeling objectives: unidirectional (both left-to-right and right-to-left), bidirectional, and sequence-to-sequence prediction.

🏆 **SOTA for Text Summarization on GigaWord (using extra training data)**

ABSTRACTIVE TEXT SUMMARIZATION | DOCUMENT SUMMARIZATION | LANGUAGE MODELLING | QUESTION ANSWERING | QUESTION GENERATION | TEXT GENERATION

★ 103

0.33 stars / hour

Paper

Code

Aggregation via Separation: Boosting Facial Landmark Detector with Semi-Supervised Style Translation

18 Aug 2019 • thesouthfrog/stylealign • TensorFlow

Facial landmark detection, or face alignment, is a fundamental task that has been extensively studied.

🏆 **SOTA for Face Alignment on WFLW**

FACE ALIGNMENT | FACIAL LANDMARK DETECTION

★ 61

0.32 stars / hour

Paper

Code

google-research

ICML 2019 2019 • google-research/google-research

Google AI Research

★ 3,672

0.30 stars / hour

Paper

Code

DuLa-Net: A Dual-Projection Network for Estimating Room Layouts from a Single RGB Panorama

CVPR 2019 • SunDaDenny/DuLa-Net • PYTORCH

We present a deep learning framework, called DuLa-Net, to predict Manhattan-world 3D room layouts from a single RGB panorama.

🏆 **SOTA for** 3D Room Layouts From A Single Rgb Panorama on Realtor360

3D ROOM LAYOUTS FROM A SINGLE RGB PANORAMA

★ 25

0.29 stars / hour

Paper

Code

Deep Graph Library: Towards Efficient and Scalable Deep Learning on Graphs

3 Sep 2019 • dmlc/dgl • PYTORCH

Accelerating research in the emerging field of deep graph learning requires new tools.

 **#10 best model for Node Classification on Cora (using extra training data)**

NODE CLASSIFICATION

★ 2,974

0.29 stars / hour

Paper

Code

The Indirect Convolution Algorithm

3 Jul 2019 • google/XNNPACK • TensorFlow

In contrast to GEMM-based algorithms, the Indirect Convolution does not reshuffle the data to fit into the GEMM primitive but introduces an indirection buffer - a buffer of pointers to the start of each row of image pixels.

★ 129

0.28 stars / hour

Paper

Code

The Design and Implementation of a Real Time Visual Search System on JD E-commerce Platform

19 Aug 2019 • vearch/vearch

We present the design and implementation of a visual search system for real time image retrieval on JD. com, the world's third largest and China's largest e-commerce site.

IMAGE RETRIEVAL

★ 72

0.25 stars / hour

Paper

Code

Unified Vision-Language Pre-Training for Image Captioning and VQA

24 Sep 2019 • LuoweiZhou/VLP • PYTORCH

The model is unified in that (1) it can be fine-tuned for either vision-language generation (e. g., image captioning) or understanding (e. g., visual question answering) tasks, and (2) it uses a shared multi-layer transformer network for both encoding and decoding, which differs from many existing methods where the encoder and decoder are implemented using separate models.

IMAGE CAPTIONING QUESTION ANSWERING TEXT GENERATION VISUAL QUESTION ANSWERING

★ 55

0.25 stars / hour

Paper

Code

mmdetection

17 Jun 2019 • open-mmlab/mmdetection • PYTORCH

Open MMLab Detection Toolbox and Benchmark

BENCHMARKING | INSTANCE SEGMENTATION | OBJECT DETECTION | SEMANTIC SEGMENTATION

★ 6,636

0.25 stars / hour

Paper

Code

Harnessing the Power of Infinitely Wide Deep Nets on Small-data Tasks

3 Oct 2019 • LeoYu/neural-tangent-kernel-UCI

On VOC07 testbed for few-shot image classification tasks on ImageNet with transfer learning (Goyal et al., 2019), replacing the linear SVM currently used with a Convolutional NTK SVM consistently improves performance.

FEW-SHOT IMAGE CLASSIFICATION | TRANSFER LEARNING

★ 23

0.24 stars / hour

Paper

Code

Cascade RPN: Delving into High-Quality Region Proposal Network with Adaptive Convolution

15 Sep 2019 • thangvubk/Cascade-RPN

This paper considers an architecture referred to as Cascade Region Proposal Network (Cascade RPN) for improving the region-proposal quality and detection performance by \textit{systematically} addressing the limitation of the conventional RPN that \textit{heuristically defines} the anchors and \textit{aligns} the features to the anchors.

 **#33 best model for** Object Detection on COCO test-dev

OBJECT DETECTION

★ 60

0.24 stars / hour

Paper

Code

rlpyt: A Research Code Base for Deep Reinforcement Learning in PyTorch

3 Sep 2019 • astooke/rlpyt • PYTORCH

rlpyt is designed as a high-throughput code base for small- to medium-scale research in deep RL.

Q-LEARNING

★ 894

0.23 stars / hour

Paper

Code

An Empirical Model of Large-Batch Training

14 Dec 2018 • astooke/rlpyt • PYTORCH

In an increasing number of domains it has been demonstrated that deep learning models can be trained using relatively large batch sizes without sacrificing data efficiency.

DOTA 2

★ 894

0.23 stars / hour

Paper

Code

Accelerated Methods for Deep Reinforcement Learning

7 Mar 2018 • astooke/rlpyt • PYTORCH

Deep reinforcement learning (RL) has achieved many recent successes, yet experiment turn-around time remains a key bottleneck in research and in practice.

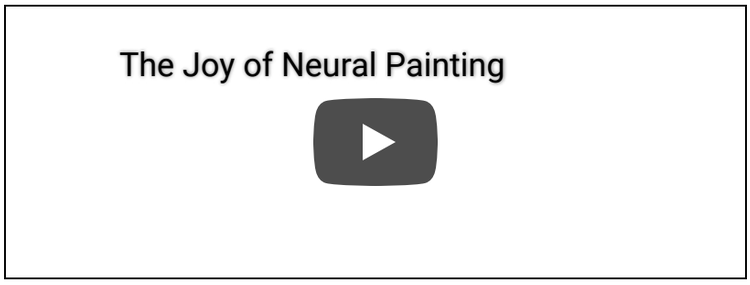
ATARI GAMES

★ 894

0.23 stars / hour

Paper

Code



neural-painters-x

17 Apr 2019 • libreai/neural-painters-x • TensorFlow

Neural Paiters

STYLE TRANSFER

★ 36

0.23 stars / hour

Paper

Code

Deferred Neural Rendering: Image Synthesis using Neural Textures

28 Apr 2019 • ondyari/FaceForensics

Similar to traditional textures, neural textures are stored as maps on top of 3D mesh proxies; however, the high-dimensional feature maps contain significantly more information, which can be interpreted by our new deferred neural rendering pipeline.

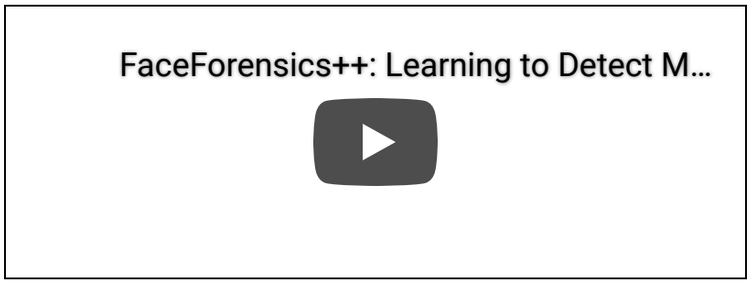
IMAGE GENERATION NOVEL VIEW SYNTHESIS

★ 750

0.23 stars / hour

Paper

Code



FaceForensics++: Learning to Detect Manipulated Facial Images

25 Jan 2019 • ondyari/FaceForensics

In particular, the benchmark is based on DeepFakes, Face2Face, FaceSwap and NeuralTextures as prominent representatives for facial manipulations at random compression level and size.

FACE SWAPPING | FAKE IMAGE DETECTION | IMAGE GENERATION

★ 750

0.23 stars / hour

Paper

Code

RetinaFace: Single-stage Dense Face Localisation in the Wild

2 May 2019 • biubug6/Pytorch_Retinaface • PYTORCH

Face Analysis Project on MXNet

🏆 SOTA for Face Detection on WIDER Face (Hard)

FACE DETECTION | FACE VERIFICATION | MULTI-TASK LEARNING

★ 130

0.23 stars / hour

Paper

Code

Cluster-GCN: An Efficient Algorithm for Training Deep and Large Graph Convolutional Networks

KDD 2019 • benedekrozemberczki/ClusterGCN • PYTORCH

Furthermore, Cluster-GCN allows us to train much deeper GCN without much time and memory overhead, which leads to improved prediction accuracy---using a 5-layer Cluster-GCN, we achieve state-of-the-art test F1 score 99. 36 on the PPI dataset, while the previous best result was 98. 71 by [16].

SOTA for Node Classification on Pubmed (F1 metric)

GRAPH CLUSTERING | NODE CLASSIFICATION

★ 193

0.22 stars / hour

Paper

Code

Cluster-GCN: An Efficient Algorithm for Training Deep and Large Graph Convolutional Networks

KDD 2019 • benedekrozemberczki/ClusterGCN • PYTORCH

Furthermore, Cluster-GCN allows us to train much deeper GCN without much time and memory overhead, which leads to improved prediction accuracy---using a 5-layer Cluster-GCN, we achieve state-of-the-art test F1 score 99. 36 on the PPI dataset, while the previous best result was 98. 71 by [16].

SOTA for Node Classification on Amazon2M

GRAPH CLUSTERING | LINK PREDICTION | NODE CLASSIFICATION

★ 193

0.22 stars / hour

Paper

Code

CodeSearchNet Challenge: Evaluating the State of Semantic Code Search

20 Sep 2019 • github/CodeSearchNet • TensorFlow

To enable evaluation of progress on code search, we are releasing the CodeSearchNet Corpus and are presenting the CodeSearchNet Challenge, which consists of 99 natural language queries with about 4k expert relevance annotations of likely results from CodeSearchNet Corpus.

CODE SEARCH | INFORMATION RETRIEVAL

★ 838

0.22 stars / hour

Paper

Code

Efficient Graph Generation with Graph Recurrent Attention Networks

2 Oct 2019 • lrjconan/GRAN • PYTORCH

Our model generates graphs one block of nodes and associated edges at a time.

GRAPH GENERATION

★ 130

0.21 stars / hour

Paper

Code

Real-Time-Voice-Cloning

NeurIPS 2018 • CorentinJ/Real-Time-Voice-Cloning • PYTORCH

Clone a voice in 5 seconds to generate arbitrary speech in real-time

SPEAKER VERIFICATION | SPEECH SYNTHESIS | TEXT-TO-SPEECH SYNTHESIS | TRANSFER LEARNING

★ 8,717

0.21 stars / hour

Paper

Code

Bag of Tricks for Image Classification with Convolutional Neural Networks

CVPR 2019 • PaddlePaddle/models • TensorFlow

Much of the recent progress made in image classification research can be credited to training procedure refinements, such as changes in data augmentations and optimization methods.

 **#58 best model for Image Classification on ImageNet**

IMAGE CLASSIFICATION | OBJECT DETECTION | SEMANTIC SEGMENTATION | TRANSFER LEARNING

★ 2,959

0.21 stars / hour

Paper

Code

DuReader: a Chinese Machine Reading Comprehension Dataset from Real-world Applications

WS 2018 • PaddlePaddle/models • TensorFlow

Experiments show that human performance is well above current state-of-the-art baseline systems, leaving plenty of room for the community to make improvements.

MACHINE READING COMPREHENSION

★ 2,959

0.21 stars / hour

Paper

Code

Pointer Networks

NeurIPS 2015 • PaddlePaddle/models • TensorFlow

It differs from the previous attention attempts in that, instead of using attention to blend hidden units of an encoder to a context vector at each decoder step, it uses attention as a pointer to select a member of the input sequence as the output.

COMBINATORIAL OPTIMIZATION

★ 2,959

0.21 stars / hour

Paper

Code

Image Synthesis with a Single (Robust) Classifier

6 Jun 2019 • MadryLab/robustness • PYTORCH

We show that the basic classification framework alone can be used to tackle some of the most challenging tasks in image synthesis.

 **#9 best model for** Image Generation on CIFAR-10

IMAGE GENERATION

★ 132

0.21 stars / hour

Paper

Code

Adversarial Robustness as a Prior for Learned Representations

3 Jun 2019 • MadryLab/robustness • PYTORCH

In this work, we show that robust optimization can be re-cast as a tool for enforcing priors on the features learned by deep neural networks.

★ 132

0.21 stars / hour

Paper

Code

Transformers: State-of-the-art Natural Language Processing

9 Oct 2019 • huggingface/transformers • TensorFlow

In this paper, we present Transformers, a library for state-of-the-art NLP, making these developments available to the community by gathering state-of-the-art general-purpose pretrained models under a unified API together with an ecosystem of libraries, examples, tutorials and scripts targeting many downstream NLP tasks.

TEXT GENERATION | TRANSFER LEARNING

★ 14,987

0.21 stars / hour

Paper

Code

DistilBERT, a distilled version of BERT: smaller, faster, cheaper and lighter

2 Oct 2019 • huggingface/transformers • TensorFlow

As Transfer Learning from large-scale pre-trained models becomes more prevalent in Natural Language Processing (NLP), operating these large models in on-the-edge and/or under constrained computational training or inference budgets remain challenging.

 **#5 best model for** Semantic Textual Similarity on MRPC

LANGUAGE MODELLING | LINGUISTIC ACCEPTABILITY | NATURAL LANGUAGE INFERENCE | QUESTION ANSWERING | SEMANTIC TEXTUAL SIMILARITY | SENTIMENT ANALYSIS | TRANSFER LEARNING

★ 14,987

0.21 stars / hour

Paper

Code

XLNet: Generalized Autoregressive Pretraining for Language Understanding

19 Jun 2019 • huggingface/transformers • TensorFlow

With the capability of modeling bidirectional contexts, denoising autoencoding based pretraining like BERT achieves better performance than pretraining approaches based on autoregressive language modeling.

🏆 **SOTA for** Natural Language Inference on Quora Question Pairs

DOCUMENT RANKING | LANGUAGE MODELLING | NATURAL LANGUAGE INFERENCE | QUESTION ANSWERING | READING COMPREHENSION | SEMANTIC TEXTUAL SIMILARITY | SENTIMENT ANALYSIS | TEXT CLASSIFICATION

★ **14,987**

0.21 stars / hour

Paper

Code

PAWS-X: A Cross-lingual Adversarial Dataset for Paraphrase Identification

30 Aug 2019 • google-research-datasets/paws

Most existing work on adversarial data generation focuses on English.

PARAPHRASE IDENTIFICATION

★ **144**

0.20 stars / hour

Paper

Code

PAWS: Paraphrase Adversaries from Word Scrambling

NAACL 2019 • google-research-datasets/paws

Existing paraphrase identification datasets lack sentence pairs that have high lexical overlap without being paraphrases.

PARAPHRASE IDENTIFICATION

★ 144

0.20 stars / hour

Paper

Code

Bilateral Multi-Perspective Matching for Natural Language Sentences

13 Feb 2017 • google-research-datasets/paws

Natural language sentence matching is a fundamental technology for a variety of tasks.

 **#6 best model for** Paraphrase Identification on Quora Question Pairs

NATURAL LANGUAGE INFERENCE PARAPHRASE IDENTIFICATION

★ 144

0.20 stars / hour

Paper

Code

xDeepFM: Combining Explicit and Implicit Feature Interactions for Recommender Systems

14 Mar 2018 • bettenW/Tencent2019_Finals_Rank1st • TensorFlow

On one hand, the xDeepFM is able to learn certain bounded-degree feature interactions explicitly; on the other hand, it can learn arbitrary low- and high-order feature interactions implicitly.

🏆 **SOTA for Click-Through Rate Prediction on Criteo**

CLICK-THROUGH RATE PREDICTION | RECOMMENDATION SYSTEMS

★ 113

0.20 stars / hour

Paper

Code

Learning to Reconstruct 3D Human Pose and Shape via Model-fitting in the Loop

27 Sep 2019 • nkolot/SPIN

Our approach is self-improving by nature, since better network estimates can lead the optimization to better solutions, while more accurate optimization fits provide better supervision for the network.

🏆 **SOTA for 3D Human Pose Estimation on 3DPW (using extra training data)**

3D HUMAN POSE ESTIMATION

★ 79

0.20 stars / hour

Paper

Code

pytorch-transformers

26 Jul 2019 • huggingface/pytorch-transformers • PYTORCH

🤗 Transformers: State-of-the-art Natural Language Processing for TensorFlow 2. 0 and PyTorch.

LANGUAGE MODELLING | LINGUISTIC ACCEPTABILITY | NATURAL LANGUAGE INFERENCE | QUESTION ANSWERING | READING COMPREHENSION | SEMANTIC TEXTUAL SIMILARITY | SENTIMENT ANALYSIS

★ 14,959

0.19 stars / hour

Paper

Code

Single-Network Whole-Body Pose Estimation

30 Sep 2019 • CMU-Perceptual-Computing-Lab/openpose_train

We present the first single-network approach for 2D~whole-body pose estimation, which entails simultaneous localization of body, face, hands, and feet keypoints.

MULTI-TASK LEARNING | POSE ESTIMATION

★ 136

0.19 stars / hour

Paper

Code

OpenPose: Realtime Multi-Person 2D Pose Estimation using Part Affinity Fields

18 Dec 2018 • CMU-Perceptual-Computing-Lab/openpose_train

OpenPose: Real-time multi-person keypoint detection library for body, face, hands, and foot estimation

KEYPOINT DETECTION

★ 136

0.19 stars / hour

Paper

Code

Albumentations: fast and flexible image augmentations

18 Sep 2018 • albu/albumentations • PYTORCH

We provide examples of image augmentations for different computer vision tasks and show that Albumentations is faster than other commonly used image augmentation tools on the most of commonly used image transformations.

DATA AUGMENTATION

★ 3,427

0.19 stars / hour

Paper

Code

Locating Objects Without Bounding Boxes

CVPR 2019 • javiribera/locating-objects-without-bboxes • PYTORCH

In these networks, the training procedure usually requires providing bounding boxes or the maximum number of expected objects.

OBJECT LOCALIZATION

★ 86

0.18 stars / hour

Paper

Code

PyODDS: An End-to-End Outlier Detection System

7 Oct 2019 • datamllab/pyodds • TensorFlow

PyODDS is an end-to end Python system for outlier detection with database support.

OUTLIER DETECTION

★ 17

0.18 stars / hour

Paper

Code

Focal Loss for Dense Object Detection

ICCV 2017 • AlexeyAB/darknet • TensorFlow

Our novel Focal Loss focuses training on a sparse set of hard examples and prevents the vast number of easy negatives from overwhelming the detector during training.

 **#32 best model for** Object Detection on COCO test-dev

DENSE OBJECT DETECTION

★ 5,196

0.18 stars / hour

Paper

Code

YOLO9000: Better, Faster, Stronger

CVPR 2017 • AlexeyAB/darknet • TensorFlow

On the 156 classes not in COCO, YOLO9000 gets 16. 0 mAP.

 **#9 best model for** Object Detection on PASCAL VOC 2007

REAL-TIME OBJECT DETECTION

★ 5,196

0.18 stars / hour

Paper

Code

YOLOv3: An Incremental Improvement

8 Apr 2018 • ultralytics/yolov3 • PYTORCH

At 320x320 YOLOv3 runs in 22 ms at 28. 2 mAP, as accurate as SSD but three times faster.

 **#4 best model for** Real-Time Object Detection on COCO

REAL-TIME OBJECT DETECTION

★ 2,423

0.17 stars / hour

Paper

Code

Learning Imbalanced Datasets with Label-Distribution-Aware Margin Loss

18 Jun 2019 • kaidic/LDAM-DRW • PYTORCH

Deep learning algorithms can fare poorly when the training dataset suffers from heavy class-imbalance but the testing criterion requires good generalization on less frequent classes.

★ 61

0.17 stars / hour

Paper

Code

Calibrating the Adaptive Learning Rate to Improve Convergence of ADAM

2 Aug 2019 • lessw2020/Ranger-Deep-Learning-Optimizer

Theoretically, we provide a new way to analyze the convergence of AGMs and prove that the convergence rate of \textsc{Adam} also depends on its hyper-parameter ϵ, which has been overlooked previously.

★ 320

0.17 stars / hour

Paper

Code

Why ReLU networks yield high-confidence predictions far away from the training data and how to mitigate the problem

CVPR 2019 • max-andr/relu_networks_overconfident • TensorFlow

We show that this technique is surprisingly effective in reducing the confidence of predictions far away from the training data while maintaining high confidence predictions and test error on the original classification task compared to standard training.

★ 103

0.17 stars / hour

Paper

Code

Res2Net: A New Multi-scale Backbone Architecture

2 Apr 2019 • gasvn/Res2Net • PYTORCH

We evaluate the Res2Net block on all these models and demonstrate consistent performance gains over baseline models on widely-used datasets, e. g., CIFAR-100 and ImageNet.

 **#5 best model for** Image Classification on CIFAR-100

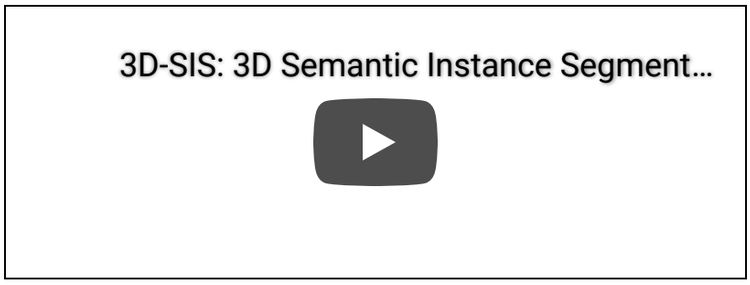
IMAGE CLASSIFICATION | SALIENT OBJECT DETECTION

★ 219

0.17 stars / hour

Paper

Code



Reinforced Cross-Modal Matching and Self-Supervised Imitation Learning for Vision-Language Navigation

CVPR 2019 • extreme-assistant/cvpr2019

Vision-language navigation (VLN) is the task of navigating an embodied agent to carry out natural language instructions inside real 3D environments.

🏆 **SOTA for** Vision-Language Navigation on Room2Room

IMITATION LEARNING | VISION-LANGUAGE NAVIGATION

★ 3,636

0.16 stars / hour

Paper

Code

Single Path One-Shot Neural Architecture Search with Uniform Sampling

31 Mar 2019 • ShunLu91/Single-Path-One-Shot-NAS • PYTORCH

One-shot method is a powerful Neural Architecture Search (NAS) framework, but its training is non-trivial and it is difficult to achieve competitive results on large scale datasets like ImageNet.

NEURAL ARCHITECTURE SEARCH | QUANTIZATION

★ 34

0.16 stars / hour

Paper

Code

Pre-Training with Whole Word Masking for Chinese BERT

19 Jun 2019 • ymcui/Chinese-BERT-wwm • PYTORCH

In this technical report, we adapt whole word masking in Chinese text, that masking the whole word instead of masking Chinese characters, which could bring another challenge in Masked Language Model (MLM) pre-training task.

LANGUAGE MODELLING | MACHINE READING COMPREHENSION | NAMED ENTITY RECOGNITION | NATURAL LANGUAGE INFERENCE | SENTIMENT ANALYSIS

★ 1,542

0.16 stars / hour

Paper

Code

U-GAT-IT: Unsupervised Generative Attentional Networks with Adaptive Layer-Instance Normalization for Image-to-Image Translation

25 Jul 2019 • taki0112/UGATIT • TensorFlow

We propose a novel method for unsupervised image-to-image translation, which incorporates a new attention module and a new learnable normalization function in an end-to-end manner.

🏆 **SOTA for** Image-to-Image Translation on selfie-to-anime

UNSUPERVISED IMAGE-TO-IMAGE TRANSLATION

★ 3,967

0.16 stars / hour

Paper

Code

ESRGAN: Enhanced Super-Resolution Generative Adversarial Networks

1 Sep 2018 • idealo/image-super-resolution

To further enhance the visual quality, we thoroughly study three key components of SRGAN - network architecture, adversarial loss and perceptual loss, and improve each of them to derive an Enhanced SRGAN (ESRGAN).

 **#2 best model for** Image Super-Resolution on Set5 - 4x upscaling

IMAGE SUPER-RESOLUTION

★ 1,223

0.16 stars / hour

Paper

Code

Residual Dense Network for Image Super-Resolution

CVPR 2018 • idealo/image-super-resolution

In this paper, we propose a novel residual dense network (RDN) to address this problem in image SR. We fully exploit the hierarchical features from all the convolutional layers.

 **#6 best model for** Image Super-Resolution on Set5 - 4x upscaling

IMAGE SUPER-RESOLUTION

★ 1,223

0.16 stars / hour

Paper

Code

Multi-scale guided attention for medical image segmentation

arXiv preprint 2019 • sinAshish/Multi-Scale-Attention • PYTORCH

In this paper we attempt to overcome these limitations with the proposed architecture, by capturing richer contextual dependencies based on the use of guided self-attention mechanisms.

🏆 **SOTA for** Medical Image Segmentation on CHAOS MRI Dataset

ATTENTIVE SEGMENTATION NETWORKS

DEEP ATTENTION

MEDICAL IMAGE SEGMENTATION

★ 69

0.16 stars / hour

Paper

Code

Multi-scale guided attention for medical image segmentation

arXiv preprint 2019 • sinAshish/Multi-Scale-Attention • PYTORCH

In this paper we attempt to overcome these limitations with the proposed architecture, by capturing richer contextual dependencies based on the use of guided self-attention mechanisms.

ATTENTIVE SEGMENTATION NETWORKS | DEEP ATTENTION | MEDICAL IMAGE SEGMENTATION

★ 69

0.16 stars / hour

Paper

Code

nlp-tutorial

NeurIPS 2017 • graykode/nlp-tutorial • PYTORCH

Natural Language Processing Tutorial for Deep Learning Researchers

CONSTITUENCY PARSING | MACHINE TRANSLATION

★ 4,552

0.15 stars / hour

Paper

Code

Skeleton-Based Action Recognition With Directed Graph Neural Networks

CVPR 2019 • kenziyuliu/DGNN-PyTorch • PYTORCH

The skeleton data have been widely used for the action recognition tasks since they can robustly accommodate dynamic circumstances and complex backgrounds.

🏆 **SOTA for** Skeleton Based Action Recognition on Kinetics-Skeleton dataset

GRAPH NEURAL NETWORK | SKELETON BASED ACTION RECOGNITION

★ 41

0.14 stars / hour

Paper

Code

Efficient and Accurate Arbitrary-Shaped Text Detection with Pixel Aggregation Network

16 Aug 2019 • WenmuZhou/PAN.pytorch • PYTORCH

Recently, some methods have been proposed to tackle arbitrary-shaped text detection, but they rarely take the speed of the entire pipeline into consideration, which may fall short in practical applications. In this paper, we propose an efficient and accurate arbitrary-shaped text detector, termed Pixel Aggregation Network (PAN), which is equipped with a low computational-cost segmentation head and a learnable post-processing.

SCENE TEXT DETECTION

★ 73

0.14 stars / hour

Paper

Code

Mask R-CNN

ICCV 2017 • facebookresearch/maskrcnn-benchmark • PYTORCH

Our approach efficiently detects objects in an image while simultaneously generating a high-quality segmentation mask for each instance.

🏆 **SOTA for Instance Segmentation on Cityscapes test (using extra training data)**

HUMAN PART SEGMENTATION | INSTANCE SEGMENTATION | KEYPOINT DETECTION | MULTI-HUMAN PARSING | NUCLEAR SEGMENTATION | OBJECT DETECTION | SEMANTIC SEGMENTATION

★ 6,648

0.14 stars / hour

GluonTS: Probabilistic Time Series Models in Python

12 Jun 2019 • awslabs/gluon-ts • mxnet

We introduce Gluon Time Series (GluonTS, available at https://gluon-ts. mxnet. io), a library for deep-learning-based time series modeling.

🏆 **SOTA for Time Series on Bitcoin-Alpha**

ANOMALY DETECTION | TIME SERIES | TIME SERIES FORECASTING | TIME SERIES PREDICTION

★ 663

0.14 stars / hour

Objects as Points

16 Apr 2019 • xingyizhou/CenterNet • TensorFlow

We model an object as a single point --- the center point of its bounding box.

🏆 **SOTA for Real-Time Object Detection on COCO**

KEYPOINT DETECTION | REAL-TIME OBJECT DETECTION

★ 2,470

0.14 stars / hour

Paper

Code

PyTorch-GAN

10 Sep 2018 • eriklindernoren/PyTorch-GAN • PYTORCH

PyTorch implementations of Generative Adversarial Networks.

★ 4,308

0.14 stars / hour

Paper

Code

FCOS: Fully Convolutional One-Stage Object Detection

2 Apr 2019 • tianzhi0549/FCOS • PYTORCH

By eliminating the predefined set of anchor boxes, FCOS completely avoids the complicated computation related to anchor boxes such as calculating overlapping during training.

 **#12 best model for** Object Detection on COCO test-dev

OBJECT DETECTION | SEMANTIC SEGMENTATION

★ 1,415

0.14 stars / hour

Paper

Code

Just Jump: Dynamic Neighborhood Aggregation in Graph Neural Networks

9 Apr 2019 • rusty1s/pytorch_geometric • PYTORCH

We propose a dynamic neighborhood aggregation (DNA) procedure guided by (multi-head) attention for representation learning on graphs.

NODE CLASSIFICATION | REPRESENTATION LEARNING

★ 5,348

0.13 stars / hour

Paper

Code

Fast Graph Representation Learning with PyTorch Geometric

6 Mar 2019 • rusty1s/pytorch_geometric • PYTORCH

We introduce PyTorch Geometric, a library for deep learning on irregularly structured input data such as graphs, point clouds and manifolds, built upon PyTorch.

 **#2 best model for** Graph Classification on REDDIT-B

GRAPH CLASSIFICATION | GRAPH REPRESENTATION LEARNING | NODE CLASSIFICATION | RELATIONAL REASONING

★ 5,348

0.13 stars / hour

Paper

Code

SplineCNN: Fast Geometric Deep Learning with Continuous B-Spline Kernels

CVPR 2018 • rusty1s/pytorch_geometric • PYTORCH

We present Spline-based Convolutional Neural Networks (SplineCNNs), a variant of deep neural networks for irregular structured and geometric input, e. g., graphs or meshes.

GRAPH CLASSIFICATION | NODE CLASSIFICATION

★ 5,348

0.13 stars / hour

Paper

Code

CBNet: A Novel Composite Backbone Network Architecture for Object Detection

9 Sep 2019 • PKUbahuangliuhe/CBNet

In existing CNN based detectors, the backbone network is a very important component for basic feature extraction, and the performance of the detectors highly depends on it.

SOTA for Object Detection on COCO test-dev

INSTANCE SEGMENTATION | OBJECT DETECTION | SEMANTIC SEGMENTATION

★ 186

0.13 stars / hour

Paper

Code

A Style-Based Generator Architecture for Generative Adversarial Networks

CVPR 2019 • NVlabs/stylegan • TensorFlow

We propose an alternative generator architecture for generative adversarial networks, borrowing from style transfer literature.

SOTA for Image Generation on CelebA-HQ 1024x1024

IMAGE GENERATION

★ 7,965

0.13 stars / hour

Paper

Code

wav2vec: Unsupervised Pre-training for Speech Recognition

11 Apr 2019 • pytorch/fairseq

Our experiments on WSJ reduce WER of a strong character-based log-mel filterbank baseline by up to 36% when only a few hours of transcribed data is available.

SPEECH RECOGNITION

★ 5,687

0.13 stars / hour

Paper

Code

A Sensitivity Analysis of (and Practitioners' Guide to) Convolutional Neural Networks for Sentence Classification

IJCNLP 2017 • brightmart/text_classification • TensorFlow

Convolutional Neural Networks (CNNs) have recently achieved remarkably strong performance on the practically important task of sentence classification (kim 2014, kalchbrenner 2014, johnson 2014).

SENTENCE CLASSIFICATION

★ 5,339

0.13 stars / hour

Paper

Code

Meta-learning algorithms for Few-Shot Computer Vision

30 Sep 2019 • ebennequin/FewShotVision • PYTORCH

Few-Shot Learning is the challenge of training a model with only a small amount of data.

FEW-SHOT IMAGE CLASSIFICATION | FEW-SHOT LEARNING | FEW-SHOT OBJECT DETECTION

★ 34

0.13 stars / hour

Paper

Code

Deep Equilibrium Models

3 Sep 2019 • locuslab/deq • PYTORCH

We present a new approach to modeling sequential data: the deep equilibrium model (DEQ).

#10 best model for Language Modelling on WikiText-103

LANGUAGE MODELLING

★ 148

0.13 stars / hour

Paper

Code

Graph Convolutional Networks for Temporal Action Localization

7 Sep 2019 • Alvin-Zeng/PGCN • PYTORCH

Then we apply the GCNs over the graph to model the relations among different proposals and learn powerful representations for the action classification and localization.

ACTION CLASSIFICATION | ACTION LOCALIZATION

★ 53

0.13 stars / hour

Paper

Code

APDrawingGAN: Generating Artistic Portrait Drawings From Face Photos With Hierarchical GANs

CVPR 2019 • yiranran/APDrawingGAN • PYTORCH

Moreover, artists tend to use different strategies to draw different facial features and the lines drawn are only loosely related to obvious image features.

IMAGE STYLIZATION

★ 77

0.13 stars / hour

Paper

Code

dabnn

26 Sep 2019 • JDAI-CV/dabnn • TensorFlow

dabnn is an accelerated binary neural networks inference framework for mobile platform

IMAGE CLASSIFICATION

★ 281

0.13 stars / hour

Paper

Code

Unlearn Dataset Bias in Natural Language Inference by Fitting the Residual

28 Aug 2019 • hhexiy/debiased • mxnet

We first learn a biased model that only uses features that are known to relate to dataset bias.

NATURAL LANGUAGE INFERENCE

★ 7

0.12 stars / hour

Paper

Code

Facebook FAIR's WMT19 News Translation Task Submission

WS 2019 • pytorch/fairseq • PYTORCH

This paper describes Facebook FAIR's submission to the WMT19 shared news translation task.

SOTA for Machine Translation on WMT2019 English-German

MACHINE TRANSLATION

★ 5,686

0.12 stars / hour

Paper

Code

LFFD: A Light and Fast Face Detector for Edge Devices

24 Apr 2019 • YonghaoHe/A-Light-and-Fast-Face-Detector-for-Edge-Devices • mxnet

Under the new schema, the proposed method can achieve superior accuracy (WIDER FACE Val/Test -- Easy: 0. 910/0. 896, Medium: 0. 881/0. 865, Hard: 0. 780/0. 770; FDDB -- discontinuous: 0. 973, continuous: 0. 724).

#6 best model for Face Detection on FDDB

FACE DETECTION

★ 579

0.12 stars / hour

Paper

Code

CTRL: A Conditional Transformer Language Model for Controllable Generation

Preprint 2019 • salesforce/ctrl • TensorFlow

Large-scale language models show promising text generation capabilities, but users cannot easily control particular aspects of the generated text.

LANGUAGE MODELLING | TEXT GENERATION

★ 987

0.12 stars / hour

Paper

Code

Deep learning for time series classification: a review

12 Sep 2018 • hfawaz/dl-4-tsc • TensorFlow

We give an overview of the most successful deep learning applications in various time series domains under a unified taxonomy of DNNs for TSC.

TIME SERIES | TIME SERIES CLASSIFICATION

★ 252

0.12 stars / hour

Paper

Code

Recurrent MVSNet for High-resolution Multi-view Stereo Depth Inference

CVPR 2019 • YoYo000/MVSNet • TensorFlow

However, one major limitation of current learned MVS approaches is the scalability: the memory-consuming cost volume regularization makes the learned MVS hard to be applied to high-resolution scenes.

★ 518

0.12 stars / hour

Paper

Code

MVSNet: Depth Inference for Unstructured Multi-view Stereo

ECCV 2018 • YoYo000/MVSNet • TensorFlow

We present an end-to-end deep learning architecture for depth map inference from multi-view images.

★ 518

0.12 stars / hour

Paper

Code

LinkNet: Exploiting Encoder Representations for Efficient Semantic Segmentation

14 Jun 2017 • qubvel/segmentation_models • TensorFlow

As a result they are huge in terms of parameters and number of operations; hence slow too.

SCENE UNDERSTANDING | SEMANTIC SEGMENTATION

★ 1,430

0.12 stars / hour

Paper

Code

Pyramid Scene Parsing Network

CVPR 2017 • qubvel/segmentation_models • TensorFlow

Scene parsing is challenging for unrestricted open vocabulary and diverse scenes.

🏆 SOTA for Real-Time Semantic Segmentation on CamVid

LESION SEGMENTATION | REAL-TIME SEMANTIC SEGMENTATION | SCENE PARSING

★ 1,430

0.12 stars / hour

Paper

Code

U-Net: Convolutional Networks for Biomedical Image Segmentation

18 May 2015 • qubvel/segmentation_models • TensorFlow

There is large consent that successful training of deep networks requires many thousand annotated training samples.

🏆 **SOTA for** Medical Image Segmentation on ISBI 2012 EM Segmentation

CELL SEGMENTATION | DATA AUGMENTATION | ELECTRON MICROSCOPY IMAGE SEGMENTATION | LESION SEGMENTATION | LUNG NODULE SEGMENTATION | PANCREAS SEGMENTATION | RETINAL VESSEL SEGMENTATION | SEMANTIC SEGMENTATION | SKIN CANCER SEGMENTATION

★ 1,430

0.12 stars / hour

Paper

Code

Learning Combinatorial Embedding Networks for Deep Graph Matching

1 Apr 2019 • rogerwwww/PCA-GM • PYTORCH

In addition with its NP-completeness nature, another important challenge is effective modeling of the node-wise and structure-wise affinity across graphs and the resulting objective, to guide the matching procedure effectively finding the true matching against noises.

GRAPH EMBEDDING | GRAPH MATCHING

★ 89

0.11 stars / hour

Paper

Code

Simple and Effective Text Matching with Richer Alignment Features

ACL 2019 • alibaba-edu/simple-effective-text-matching • TensorFlow

In this paper, we present a fast and strong neural approach for general purpose text matching applications.

 **#2 best model for** Question Answering on WikiQA

ANSWER SELECTION | NATURAL LANGUAGE INFERENCE | PARAPHRASE IDENTIFICATION | TEXT MATCHING

★ 103

0.11 stars / hour

Paper

Code

SpanBERT: Improving Pre-training by Representing and Predicting Spans

24 Jul 2019 • facebookresearch/SpanBERT • TensorFlow

We present SpanBERT, a pre-training method that is designed to better represent and predict spans of text.

🏆 **SOTA for** Question Answering on NewsQA

COREFERENCE RESOLUTION | LINGUISTIC ACCEPTABILITY | NATURAL LANGUAGE INFERENCE | OPEN-DOMAIN QUESTION ANSWERING | RELATION EXTRACTION | SEMANTIC TEXTUAL SIMILARITY | SENTIMENT ANALYSIS

★ 92

0.11 stars / hour

Paper

Code

Volumetric Instance-Aware Semantic Mapping and 3D Object Discovery

IEEE ROBOTICS AND AUTOMATION LETTERS 2019 • ethz-asl/voxblox-plusplus

To autonomously navigate and plan interactions in real-world environments, robots require the ability to robustly perceive and map complex, unstructured surrounding scenes.

3D SEMANTIC INSTANCE SEGMENTATION

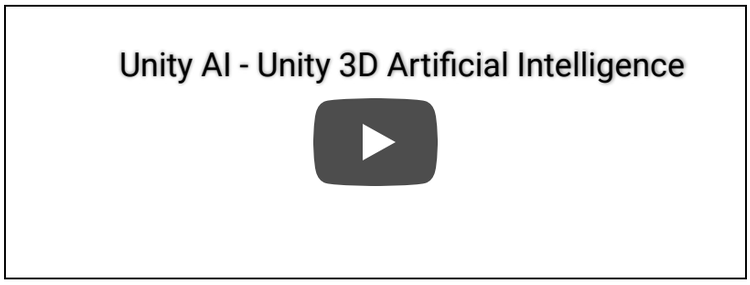
3D VOLUMETRIC RECONSTRUCTION

★ 47

0.11 stars / hour

Paper

Code



Unity: A General Platform for Intelligent Agents

7 Sep 2018 • Unity-Technologies/ml-agents • TensorFlow

Recent advances in Deep Reinforcement Learning and Robotics have been driven by the presence of increasingly realistic and complex simulation environments.

★ 6,909

0.11 stars / hour

Paper

Code

EfficientNet: Rethinking Model Scaling for Convolutional Neural Networks

ICML 2019 • qubvel/efficientnet • TensorFlow

Convolutional Neural Networks (ConvNets) are commonly developed at a fixed resource budget, and then scaled up for better accuracy if more resources are available.

🏆 **SOTA for Image Classification on Stanford Cars (using extra training data)**

FINE-GRAINED IMAGE CLASSIFICATION

NEURAL ARCHITECTURE SEARCH TRANSFER LEARNING

★ 593

0.11 stars / hour

Paper

Code

GPipe: Efficient Training of Giant Neural Networks using Pipeline Parallelism

16 Nov 2018 • qubvel/efficientnet • TensorFlow

Scaling up deep neural network capacity has been known as an effective approach to improving model quality for several different machine learning tasks.

🏆 **SOTA for Image Classification on CIFAR-10 (using extra training data)**

FINE-GRAINED IMAGE CLASSIFICATION MACHINE TRANSLATION

★ 593

0.11 stars / hour

Paper

Code

Deep Residual Learning for Image Recognition

CVPR 2016 • qubvel/efficientnet • TensorFlow

Deep residual nets are foundations of our submissions to ILSVRC & COCO 2015 competitions, where we also won the 1st places on the tasks of ImageNet detection, ImageNet localization, COCO detection, and COCO segmentation.

 **#7 best model for** Semantic Segmentation on Cityscapes val

IMAGE CLASSIFICATION | OBJECT DETECTION | SEMANTIC SEGMENTATION

★ 593

0.11 stars / hour

Paper

Code

AdaptIS: Adaptive Instance Selection Network

17 Sep 2019 • saic-vul/adaptis • PYTORCH

Given an input image and a point (x, y), it generates a mask for the object located at (x, y).

🏆 **SOTA for** Panoptic Segmentation on Cityscapes val

INSTANCE SEGMENTATION | PANOPTIC SEGMENTATION

★ 98

0.11 stars / hour

Paper

Code

Torchmeta: A Meta-Learning library for PyTorch

14 Sep 2019 • tristandeleu/pytorch-meta • PYTORCH

The constant introduction of standardized benchmarks in the literature has helped accelerating the recent advances in meta-learning research.

META-LEARNING

★ 338

0.11 stars / hour

Paper

Code

Simple and Effective Text Matching with Richer Alignment Features

ACL 2019 • hitvoice/RE2 • TensorFlow

In this paper, we present a fast and strong neural approach for general purpose text matching applications.

ANSWER SELECTION NATURAL LANGUAGE INFERENCE PARAPHRASE IDENTIFICATION TEXT MATCHING

★ 103

0.11 stars / hour

Paper

Code

TSM: Temporal Shift Module for Efficient Video Understanding

20 Nov 2018 • MIT-HAN-LAB/temporal-shift-module • PYTORCH

The explosive growth in video streaming gives rise to challenges on performing video understanding at high accuracy and low computation cost.

VIDEO OBJECT DETECTION | VIDEO RECOGNITION | VIDEO UNDERSTANDING

★ 381

0.11 stars / hour

Paper

Code

Non-local Neural Networks

CVPR 2018 • MIT-HAN-LAB/temporal-shift-module • PYTORCH

Both convolutional and recurrent operations are building blocks that process one local neighborhood at a time.

#3 best model for Instance Segmentation on COCO minival

INSTANCE SEGMENTATION | KEYPOINT DETECTION | OBJECT DETECTION | VIDEO CLASSIFICATION

★ 381

0.11 stars / hour

Paper

Code

Temporal Segment Networks: Towards Good Practices for Deep Action Recognition

2 Aug 2016 • MIT-HAN-LAB/temporal-shift-module • PYTORCH

The other contribution is our study on a series of good practices in learning ConvNets on video data with the help of temporal segment network.

 **#3 best model for** Multimodal Activity Recognition on EV-Action

ACTION RECOGNITION IN VIDEOS

MULTIMODAL ACTIVITY RECOGNITION

★ 381

0.11 stars / hour

Paper

Code

CutMix: Regularization Strategy to Train Strong Classifiers with Localizable Features

13 May 2019 • ildoonet/cutmix • PYTORCH

Regional dropout strategies have been proposed to enhance the performance of convolutional neural network classifiers.

 **#52 best model for** Image Classification on ImageNet

IMAGE CAPTIONING

IMAGE CLASSIFICATION

OBJECT LOCALIZATION

OUT-OF-DISTRIBUTION DETECTION

★ 22

0.11 stars / hour

Paper

Code

Object Instance Annotation With Deep Extreme Level Set Evolution

CVPR 2019 • fidler-lab/delse • PYTORCH

We revive the old ideas on level set segmentation which framed object annotation as curve evolution.

SEMANTIC SEGMENTATION | VIDEO SEMANTIC SEGMENTATION

★ 23

0.11 stars / hour

Paper

Code

CHINESE-OCR

28 Feb 2018 • xiaofengShi/CHINESE-OCR • TensorFlow

[python3. 6] 运用tf实现自然场景文字检测, keras/pytorch实现ctpn+crnn+ctc实现不定长场景文字OCR识别

OPTICAL CHARACTER RECOGNITION

★ 1,378

0.11 stars / hour

Paper

Code

Network Pruning via Transformable Architecture Search

23 May 2019 • D-X-Y/GDAS • PYTORCH

The maximum probability for the size in each distribution serves as the width and depth of the pruned network, whose parameters are learned by knowledge transfer, e. g., knowledge distillation, from the original networks.

NETWORK PRUNING | NEURAL ARCHITECTURE SEARCH | TRANSFER LEARNING

★ 352

0.11 stars / hour

Paper

Code

Google Research Football: A Novel Reinforcement Learning Environment

25 Jul 2019 • google-research/football • TensorFlow

Recent progress in the field of reinforcement learning has been accelerated by virtual learning environments such as video games, where novel algorithms and ideas can be quickly tested in a safe and reproducible manner.

GAME OF FOOTBALL

★ 1,577

0.11 stars / hour

Paper

Code

GNN-FiLM: Graph Neural Networks with Feature-wise Linear Modulation

28 Jun 2019 • microsoft/tf-gnn-samples • TensorFlow

This paper presents a new Graph Neural Network (GNN) type using feature-wise linear modulations (FiLM).

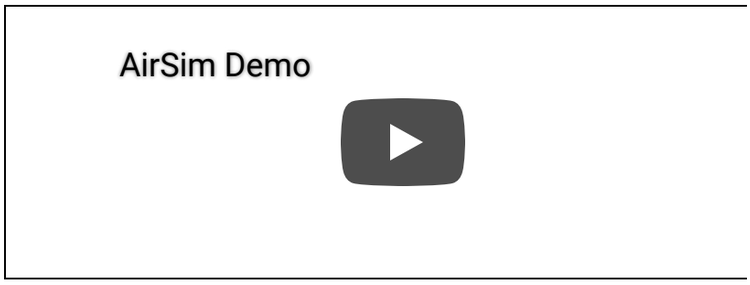
GRAPH NEURAL NETWORK

★ 97

0.11 stars / hour

Paper

Code



AirSim: High-Fidelity Visual and Physical Simulation for Autonomous Vehicles

15 May 2017 • Microsoft/AirSim • TensorFlow

Developing and testing algorithms for autonomous vehicles in real world is an expensive and time consuming process.

AUTONOMOUS VEHICLES

★ 8,988

0.11 stars / hour

Paper

Code

sentence-transformers

27 Aug 2019 • UKPLab/sentence-transformers • PYTORCH

Sentence Embeddings with BERT & XLNet

SEMANTIC TEXTUAL SIMILARITY | SENTENCE EMBEDDINGS | TRANSFER LEARNING

★ 385

0.11 stars / hour

Paper

Code

Automatic Differentiation in PyTorch

NIPS 2017 2017 • pytorch/pytorch • PYTORCH

In this article, we describe an automatic differentiation module of PyTorch — a library designed to enable rapid research on machine learning models.

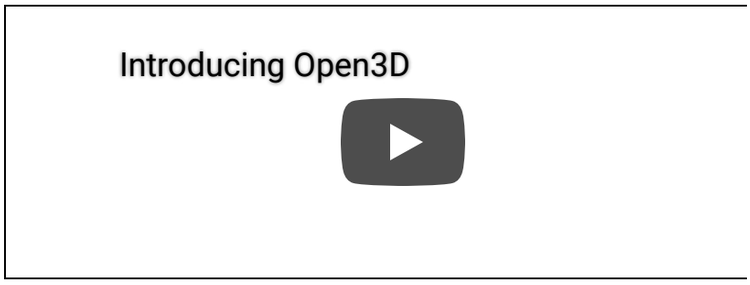
DIMENSIONALITY REDUCTION

★ 32,237

0.11 stars / hour

Paper

Code



Open3D: A Modern Library for 3D Data Processing

30 Jan 2018 • IntelVCL/Open3D • PYTORCH

The Open3D frontend exposes a set of carefully selected data structures and algorithms in both C++ and Python.

★ 2,025

0.11 stars / hour

Paper

Code

Learning What and Where to Transfer

15 May 2019 • jindongwang/transferlearning • PYTORCH

To address the issue, we propose a novel transfer learning approach based on meta-learning that can automatically learn what knowledge to transfer from the source network to where in the target network.

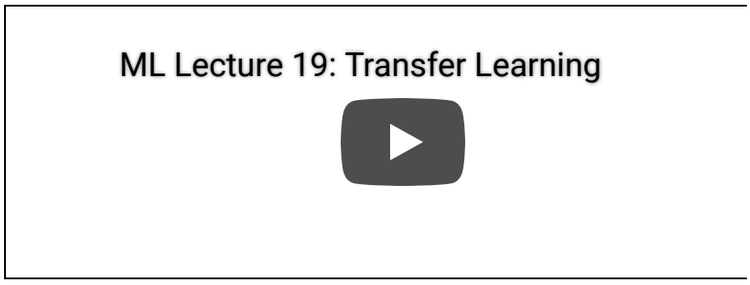
META-LEARNING TRANSFER LEARNING

★ 3,965

0.11 stars / hour

Paper

Code



Easy Transfer Learning By Exploiting Intra-domain Structures

2 Apr 2019 • jindongwang/transferlearning • PYTORCH

In this paper, we propose a practically Easy Transfer Learning (EasyTL) approach which requires no model selection and hyperparameter tuning, while achieving competitive performance.

🏆 **SOTA for** Transfer Learning on ImageCLEF-DA

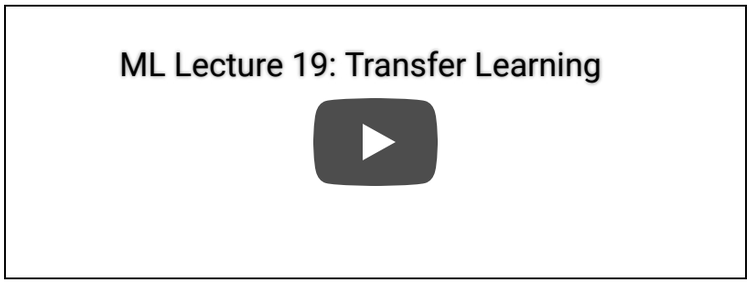
MODEL SELECTION | TRANSFER LEARNING

★ 3,965

0.11 stars / hour

Paper

Code



Visual Domain Adaptation with Manifold Embedded Distribution Alignment

19 Jul 2018 • jindongwang/transferlearning • PYTORCH

Existing methods either attempt to align the cross-domain distributions, or perform manifold subspace learning.

🏆 **SOTA for** Domain Adaptation on ImageCLEF-DA

UNSUPERVISED DOMAIN ADAPTATION

★ 3,965

0.11 stars / hour

Paper

Code

NeMo: a toolkit for building AI applications using Neural Modules

14 Sep 2019 • NVIDIA/NeMo • PYTORCH

NeMo (Neural Modules) is a Python framework-agnostic toolkit for creating AI applications through re-usability, abstraction, and composition.

SPEECH RECOGNITION

★ 741

0.10 stars / hour

Paper

Code

What Is Wrong With Scene Text Recognition Model Comparisons? Dataset and Model Analysis

3 Apr 2019 • clovaai/deep-text-recognition-benchmark • PYTORCH

Many new proposals for scene text recognition (STR) models have been introduced in recent years.

SCENE TEXT RECOGNITION

★ 632

0.10 stars / hour

Paper

Code

Trivializations for Gradient-Based Optimization on Manifolds

20 Sep 2019 • Lezcano/expRNN • PYTORCH

We prove conditions under which a trivialization is sound in the context of gradient-based optimization and we show how two large families of trivializations have overall favorable properties, but also suffer from a performance issue.

★ 41

0.10 stars / hour

Paper

Code

Cheap Orthogonal Constraints in Neural Networks: A Simple Parametrization of the Orthogonal and Unitary Group

24 Jan 2019 • Lezcano/expRNN • PYTORCH

We demonstrate how our method constitutes a more robust approach to optimization with orthogonal constraints, showing faster, accurate, and more stable convergence in several tasks designed to test RNNs.

★ 41

0.10 stars / hour

Paper

Code

Prototypical Networks for Few-shot Learning

NeurIPS 2017 • oscarknagg/few-shot • PYTORCH

We propose prototypical networks for the problem of few-shot classification, where a classifier must generalize to new classes not seen in the training set, given only a small number of examples of each new class.

🏆 **SOTA for** Few-Shot Image Classification on CUB-200 - 0-Shot Learning

FEW-SHOT IMAGE CLASSIFICATION ONE-SHOT LEARNING ZERO-SHOT LEARNING

★ 319

0.10 stars / hour

Paper

Code

Model-Agnostic Meta-Learning for Fast Adaptation of Deep Networks

ICML 2017 • oscarknagg/few-shot • PYTORCH

We propose an algorithm for meta-learning that is model-agnostic, in the sense that it is compatible with any model trained with gradient descent and applicable to a variety of different learning problems, including classification, regression, and reinforcement learning.

🏆 **SOTA for** Few-Shot Image Classification on OMNIGLOT - 5-Shot Learning

FEW-SHOT IMAGE CLASSIFICATION | ONE-SHOT LEARNING

★ 319

0.10 stars / hour

Paper

Code

Matching Networks for One Shot Learning

NeurIPS 2016 • oscarknagg/few-shot • PYTORCH

Our algorithm improves one-shot accuracy on ImageNet from 87. 6% to 93. 2% and from 88. 0% to 93. 8% on Omniglot compared to competing approaches.

#6 best model for Few-Shot Image Classification on OMNIGLOT - 1-Shot Learning

FEW-SHOT IMAGE CLASSIFICATION | LANGUAGE MODELLING | METRIC LEARNING | OMNIGLOT | ONE-SHOT LEARNING

★ 319

0.10 stars / hour

Paper

Code

Remedying BiLSTM-CNN Deficiency in Modeling Cross-Context for NER

29 Aug 2019 • ckiplab/ckiptagger • TensorFlow

Recent researches prevalently used BiLSTM-CNN as a core module for NER in a sequence-labeling setup.

 **#3 best model for** Named Entity Recognition on Long-tail emerging entities

NAMED ENTITY RECOGNITION

★ 1,052

0.10 stars / hour

Paper

Code

Emergent Tool Use From Multi-Agent Autocurricula

17 Sep 2019 • openai/multi-agent-emergence-environments

Through multi-agent competition, the simple objective of hide-and-seek, and standard reinforcement learning algorithms at scale, we find that agents create a self-supervised autocurriculum inducing multiple distinct rounds of emergent strategy, many of which require sophisticated tool use and coordination.

★ 466

0.10 stars / hour

Paper

Code

Temporal Segment Networks for Action Recognition in Videos

8 May 2017 • open-mmlab/mmaction • PYTORCH

Furthermore, based on the temporal segment networks, we won the video classification track at the ActivityNet challenge 2016 among 24 teams, which demonstrates the effectiveness of TSN and the proposed good practices.

 **#5 best model for** Action Classification on Moments in Time **(Top 5 Accuracy metric)**

ACTION CLASSIFICATION | ACTION RECOGNITION IN VIDEOS

★ 871

0.10 stars / hour

Paper

Code

Temporal Action Detection with Structured Segment Networks

ICCV 2017 • open-mmlab/mmaction • PYTORCH

Detecting actions in untrimmed videos is an important yet challenging task.

 **#4 best model for** Action Recognition In Videos on THUMOS'14

ACTION DETECTION | ACTION RECOGNITION IN VIDEOS

★ 871

0.10 stars / hour

Paper

Code

Joint Monocular 3D Vehicle Detection and Tracking

26 Nov 2018 • ucbdrive/3d-vehicle-tracking • PYTORCH

The framework can not only associate detections of vehicles in motion over time, but also estimate their complete 3D bounding box information from a sequence of 2D images captured on a moving platform.

🏆 **SOTA for** Multiple Object Tracking on KITTI Object Tracking Evaluation 2012

3D OBJECT DETECTION | 3D POSE ESTIMATION | AUTONOMOUS VEHICLES | MULTIPLE OBJECT TRACKING | ONLINE MULTI-OBJECT TRACKING | TRAJECTORY PREDICTION

★ 192

0.10 stars / hour

Paper

Code

PyOD: A Python Toolbox for Scalable Outlier Detection

6 Jan 2019 • yzhao062/pyod • TensorFlow

PyOD is an open-source Python toolbox for performing scalable outlier detection on multivariate data.

ANOMALY DETECTION | OUTLIER ENSEMBLES

★ 2,491

0.10 stars / hour

Paper

Code

FSA-Net: Learning Fine-Grained Structure Aggregation for Head Pose Estimation From a Single Image

CVPR 2019 • shamangary/FSA-Net • TensorFlow

Our method is based on regression and feature aggregation.

SOTA for Head Pose Estimation on AFLW2000

DEPTH ESTIMATION | HEAD POSE ESTIMATION

★ 218

0.10 stars / hour

Paper

Code

Class-Balanced Loss Based on Effective Number of Samples

CVPR 2019 • vandit15/Class-balanced-loss-pytorch • PYTORCH

We design a re-weighting scheme that uses the effective number of samples for each class to re-balance the loss, thereby yielding a class-balanced loss.

IMAGE CLASSIFICATION

★ 161

0.10 stars / hour

Paper

Code

WhySoMuch

12 Nov 2018 • BaeSeulki/WhySoMuch

knowledge graph recommendation

KNOWLEDGE GRAPHS | RECOMMENDATION SYSTEMS

★ 46

0.10 stars / hour

Paper

Code

Neural Text Generation with Unlikelihood Training

12 Aug 2019 • facebookresearch/unlikelihood_training • PYTORCH

Neural text generation is a key tool in natural language applications, but it is well known there are major problems at its core.

TEXT GENERATION

★ 102

0.10 stars / hour

Paper

Code

Horovod: fast and easy distributed deep learning in TensorFlow

15 Feb 2018 • horovod/horovod • TensorFlow

Depending on the particular methods employed, this communication may entail anywhere from negligible to significant overhead.

★ 7,630

0.10 stars / hour

Paper

Code

KagNet: Knowledge-Aware Graph Networks for Commonsense Reasoning

4 Sep 2019 • INK-USC/KagNet • TensorFlow

Commonsense reasoning aims to empower machines with the human ability to make presumptions about ordinary situations in our daily life.

🏆 **SOTA for Common Sense Reasoning on CommonsenseQA (using extra training data)**

COMMON SENSE REASONING

KNOWLEDGE BASE QUESTION ANSWERING

KNOWLEDGE GRAPHS

NATURAL LANGUAGE INFERENCE

★ 53

0.10 stars / hour

Paper

Code

NIMA: Neural Image Assessment

15 Sep 2017 • idealo/image-quality-assessment • TensorFlow

Automatically learned quality assessment for images has recently become a hot topic due to its usefulness in a wide variety of applications such as evaluating image capture pipelines, storage techniques and sharing media.

#4 best model for Aesthetics Quality Assessment on AVA

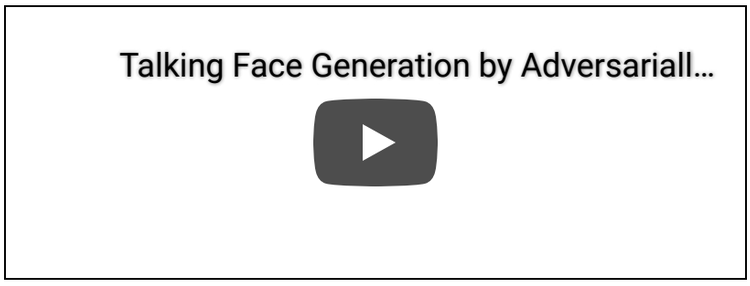
AESTHETICS QUALITY ASSESSMENT

★ 555

0.10 stars / hour

Paper

Code



Talking Face Generation by Adversarially Disentangled Audio-Visual Representation

20 Jul 2018 • Hangz-nju-cuhk/Talking-Face-Generation-DAVS • PYTORCH

Talking face generation aims to synthesize a sequence of face images that correspond to a clip of speech.

TALKING FACE GENERATION VIDEO RETRIEVAL

★ 412

0.10 stars / hour

Paper

Code

A Multiscale Visualization of Attention in the Transformer Model

ACL 2019 • jessevig/bertviz • PYTORCH

The Transformer is a sequence model that forgoes traditional recurrent architectures in favor of a fully attention-based approach.

★ 935

0.09 stars / hour

Paper

Code

MultiQA: An Empirical Investigation of Generalization and Transfer in Reading Comprehension

ACL 2019 • alontalmor/multiqa • PYTORCH

A large number of reading comprehension (RC) datasets has been created recently, but little analysis has been done on whether they generalize to one another, and the extent to which existing datasets can be leveraged for improving performance on new ones.

READING COMPREHENSION

★ 60

0.09 stars / hour

Paper

Code

On the Art and Science of Machine Learning Explanations

5 Oct 2018 • jphall663/awesome-machine-learning-interpretability • TensorFlow

This text discusses several popular explanatory methods that go beyond the error measurements and plots traditionally used to assess machine learning models.

★ 1,334

0.09 stars / hour

Paper

Code

DARTS: Differentiable Architecture Search

ICLR 2019 • quark0/darts • PYTORCH

This paper addresses the scalability challenge of architecture search by formulating the task in a differentiable manner.

 **#16 best model for** Language Modelling on Penn Treebank (Word Level)

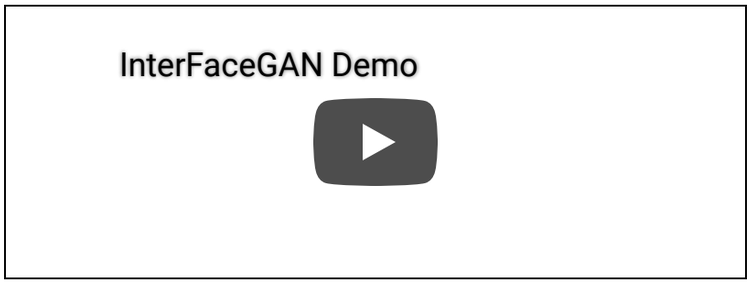
IMAGE CLASSIFICATION LANGUAGE MODELLING NEURAL ARCHITECTURE SEARCH

★ 2,373

0.09 stars / hour

Paper

Code



Interpreting the Latent Space of GANs for Semantic Face Editing

25 Jul 2019 • ShenYujun/InterFaceGAN • TensorFlow

In this work, we interpret the semantics hidden in the latent space of well-trained GANs.

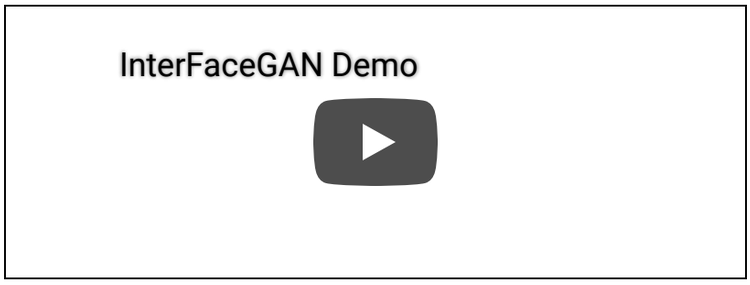
IMAGE GENERATION

★ 202

0.09 stars / hour

Paper

Code



Progressive Growing of GANs for Improved Quality, Stability, and Variation

ICLR 2018 • ShenYujun/InterFaceGAN • TensorFlow

We describe a new training methodology for generative adversarial networks.

#2 best model for Image Generation on CIFAR-10

FACE GENERATION

★ 202

0.09 stars / hour

Paper

Code

Improving RetinaNet for CT Lesion Detection with Dense Masks from Weak RECIST Labels

5 Jun 2019 • fizyr/keras-retinanet • TensorFlow

We propose a highly accurate and efficient one-stage lesion detector, by re-designing a RetinaNet to meet the particular challenges in medical imaging.

COMPUTED TOMOGRAPHY (CT) SKIN LESION IDENTIFICATION

★ 3,183

0.09 stars / hour

Paper

Code

A fast, complete, point cloud based loop closure for LiDAR odometry and mapping

25 Sep 2019 • hku-mars/loam_livox

This paper presents a loop closure method to correct the long-term drift in LiDAR odometry and mapping (LOAM).

★ 214

0.09 stars / hour

Paper

Code

Loam_livox: A fast, robust, high-precision LiDAR odometry and mapping package for LiDARs of small FoV

15 Sep 2019 • hku-mars/loam_livox

LiDAR odometry and mapping (LOAM) has been playing an important role in autonomous vehicles, due to its ability to simultaneously localize the robot's pose and build high-precision, high-resolution maps of the surrounding environment.

AUTONOMOUS NAVIGATION

★ 214

0.09 stars / hour

Paper

Code

A Survey of Unsupervised Deep Domain Adaptation

6 Dec 2018 • zhaoxin94/awsome-domain-adaptation • PYTORCH

Deep learning has produced state-of-the-art results for a variety of tasks.

TRANSFER LEARNING | UNSUPERVISED DOMAIN ADAPTATION

★ 1,177

0.09 stars / hour

Paper

Code

Expectation-Maximization Attention Networks for Semantic Segmentation

31 Jul 2019 • XiaLiPKU/EMANet • PYTORCH

It is designed to compute the representation of each position by a weighted sum of the features at all positions.

SEMANTIC SEGMENTATION

★ 316

0.09 stars / hour

Paper

Code

A Neural Representation of Sketch Drawings

ICLR 2018 • googlecreativelab/quickdraw-dataset • TensorFlow

We present sketch-rnn, a recurrent neural network (RNN) able to construct stroke-based drawings of common objects.

★ 3,244

0.09 stars / hour

Paper

Code

Distributed and parallel time series feature extraction for industrial big data applications

25 Oct 2016 • blue-yonder/tsfresh

This problem is especially hard to solve for time series classification and regression in industrial applications such as predictive maintenance or production line optimization, for which each label or regression target is associated with several time series and meta-information simultaneously.

FEATURE IMPORTANCE FEATURE SELECTION TIME SERIES TIME SERIES CLASSIFICATION

★ 4,221

0.09 stars / hour

Follow me on LinkedIn for more:
Steve Nouri
https://www.linkedin.com/in/stevenouri/

Paper

Code

Imbalance Problems in Object Detection: A Review

31 Aug 2019 • kemaloksuz/ObjectDetectionImbalance

In this paper, we present a comprehensive review of the imbalance problems in object detection.

OBJECT DETECTION

★ 343

0.09 stars / hour

Paper

Code

Searching for MobileNetV3

6 May 2019 • dmlc/gluon-cv • mxnet

We achieve new state of the art results for mobile classification, detection and segmentation.

 **#74 best model for** Image Classification on ImageNet

IMAGE CLASSIFICATION NEURAL ARCHITECTURE SEARCH

OBJECT DETECTION SEMANTIC SEGMENTATION

★ 3,046

0.09 stars / hour

Paper

Code

Bag of Freebies for Training Object Detection Neural Networks

11 Feb 2019 • dmlc/gluon-cv • mxnet

Training heuristics greatly improve various image classification model accuracies~\cite{he2018bag}.

IMAGE CLASSIFICATION | OBJECT DETECTION

★ 3,046

0.09 stars / hour

Paper

Code

Unsupervised Data Augmentation for Consistency Training

arXiv 2019 • google-research/uda • TensorFlow

In this work, we present a new perspective on how to effectively noise unlabeled examples and argue that the quality of noising, specifically those produced by advanced data augmentation methods, plays a crucial role in semi-supervised learning.

🏆 **SOTA for** Semi-Supervised Image Classification on CIFAR-10, 4000 Labels

DATA AUGMENTATION | SEMI-SUPERVISED IMAGE CLASSIFICATION | TEXT CLASSIFICATION | TRANSFER LEARNING

★ 678

0.09 stars / hour

Paper

Code

Unsupervised Data Augmentation

arXiv 2019 • google-research/uda • TensorFlow

Unlike previous methods that use random noise such as Gaussian noise or dropout noise, UDA has a small twist in that it makes use of harder and more realistic noise generated by state-of-the-art data augmentation methods.

🏆 **SOTA for** Sentiment Analysis on Yelp Binary classification

DATA AUGMENTATION | SENTIMENT ANALYSIS | TEXT CLASSIFICATION

★ 678

0.09 stars / hour

Paper

Code

Benchmarking Automatic Machine Learning Frameworks

17 Aug 2018 • automl/auto-sklearn

AutoML serves as the bridge between varying levels of expertise when designing machine learning systems and expedites the data science process.

AUTOMATED FEATURE ENGINEERING | BENCHMARKING | HYPERPARAMETER OPTIMIZATION

★ 3,949

0.09 stars / hour

Paper

Code

Efficient and Robust Automated Machine Learning

NeurIPS 2015 • automl/auto-sklearn

The success of machine learning in a broad range of applications has led to an ever-growing demand for machine learning systems that can be used off the shelf by non-experts.

HYPERPARAMETER OPTIMIZATION

★ 3,949

0.09 stars / hour

Paper

Code

Supplementary Material for Efficient and Robust Automated Machine Learning

NIPS 2015 2015 • automl/auto-sklearn

Supplementary Material for Efficient and Robust Automated Machine Learning

HYPERPARAMETER OPTIMIZATION

★ 3,949

0.09 stars / hour

Paper

Code

vision

ECCV 2018 • pytorch/vision • PYTORCH

Datasets, Transforms and Models specific to Computer Vision

IMAGE CLASSIFICATION

★ 4,569

0.09 stars / hour

Paper

Code

Deep Hough Voting for 3D Object Detection in Point Clouds

21 Apr 2019 • facebookresearch/votenet • PYTORCH

Current 3D object detection methods are heavily influenced by 2D detectors.

SOTA for 3D Object Detection on SUN-RGBD

3D OBJECT DETECTION

★ 518

0.09 stars / hour

Paper

Code

PointNet++: Deep Hierarchical Feature Learning on Point Sets in a Metric Space

NeurIPS 2017 • facebookresearch/votenet • PYTORCH

By exploiting metric space distances, our network is able to learn local features with increasing contextual scales.

 **#2 best model for** Semantic Segmentation on ShapeNet

3D PART SEGMENTATION

★ 518

0.09 stars / hour

Paper

Code

Attention U-Net: Learning Where to Look for the Pancreas

11 Apr 2018 • LeeJunHyun/Image_Segmentation • PYTORCH

We propose a novel attention gate (AG) model for medical imaging that automatically learns to focus on target structures of varying shapes and sizes.

🏆 **SOTA for** Pancreas Segmentation on TCIA Pancreas-CT Dataset

PANCREAS SEGMENTATION

SEMANTIC SEGMENTATION

★ 543

0.09 stars / hour

Paper

Code

Recurrent Residual Convolutional Neural Network based on U-Net (R2U-Net) for Medical Image Segmentation

20 Feb 2018 • LeeJunHyun/Image_Segmentation • PYTORCH

In this paper, we propose a Recurrent Convolutional Neural Network (RCNN) based on U-Net as well as a Recurrent Residual Convolutional Neural Network (RRCNN) based on U-Net models, which are named RU-Net and R2U-Net respectively.

🏆 **SOTA for** Lung Nodule Segmentation on LUNA

IMAGE CLASSIFICATION | LESION SEGMENTATION | LUNG NODULE SEGMENTATION | RETINAL VESSEL SEGMENTATION | SEMANTIC SEGMENTATION | SKIN CANCER SEGMENTATION

★ 543

0.09 stars / hour

Paper

Code

Few-Shot Unsupervised Image-to-Image Translation

5 May 2019 • NVlabs/FUNIT • PYTORCH

Unsupervised image-to-image translation methods learn to map images in a given class to an analogous image in a different class, drawing on unstructured (non-registered) datasets of images.

UNSUPERVISED IMAGE-TO-IMAGE TRANSLATION

★ 955

0.09 stars / hour

Paper

Code

Tune: A Research Platform for Distributed Model Selection and Training

13 Jul 2018 • ray-project/ray

We show that this interface meets the requirements for a broad range of hyperparameter search algorithms, allows straightforward scaling of search to large clusters, and simplifies algorithm implementation.

HYPERPARAMETER OPTIMIZATION | MODEL SELECTION

★ 8,896

0.09 stars / hour

Paper

Code

DeepCTR

23 May 2019 • shenweichen/DeepCTR • TensorFlow

Easy-to-use, Modular and Extendible package of deep-learning based CTR models.

CLICK-THROUGH RATE PREDICTION | FEATURE IMPORTANCE

★ 2,110

0.08 stars / hour

Paper

Code

OpenSpiel: A Framework for Reinforcement Learning in Games

26 Aug 2019 • deepmind/open_spiel

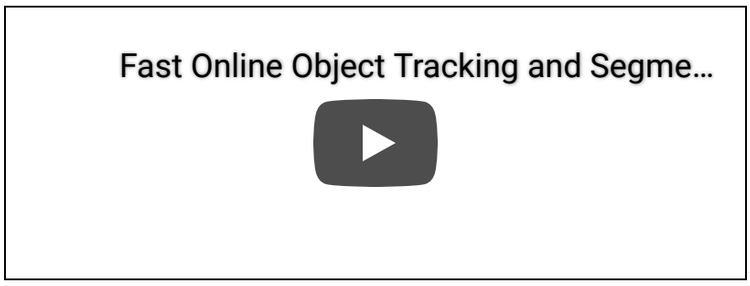
OpenSpiel is a collection of environments and algorithms for research in general reinforcement learning and search/planning in games.

★ 1,635

0.08 stars / hour

Paper

Code



Fast Online Object Tracking and Segmentation: A Unifying Approach

CVPR 2019 • foolwood/SiamMask • PYTORCH

In this paper we illustrate how to perform both visual object tracking and semi-supervised video object segmentation, in real-time, with a single simple approach.

#3 best model for Visual Object Tracking on YouTube-VOS

REAL-TIME VISUAL TRACKING

SEMI-SUPERVISED SEMANTIC SEGMENTATION

SEMI-SUPERVISED VIDEO OBJECT SEGMENTATION

VISUAL OBJECT TRACKING

★ 2,045

0.08 stars / hour

Paper

Code

LXMERT: Learning Cross-Modality Encoder Representations from Transformers

20 Aug 2019 • airsplay/lxmert • PYTORCH

In LXMERT, we build a large-scale Transformer model that consists of three encoders: an object relationship encoder, a language encoder, and a cross-modality encoder.

🏆 **SOTA for** Visual Reasoning on NLVR

LANGUAGE MODELLING | QUESTION ANSWERING | VISUAL QUESTION ANSWERING | VISUAL REASONING

★ 157

0.08 stars / hour

Paper

Code

Bottom-Up and Top-Down Attention for Image Captioning and Visual Question Answering

CVPR 2018 • airsplay/lxmert • PYTORCH

Top-down visual attention mechanisms have been used extensively in image captioning and visual question answering (VQA) to enable deeper image understanding through fine-grained analysis and even multiple steps of reasoning.

🏆 **SOTA for** Visual Question Answering on COCO Visual Question Answering (VQA) real images 2.0 open ended

IMAGE CAPTIONING | VISUAL QUESTION ANSWERING

★ 157

0.08 stars / hour

Paper

Code