

Analysis of monkey pose estimation using deep learning.

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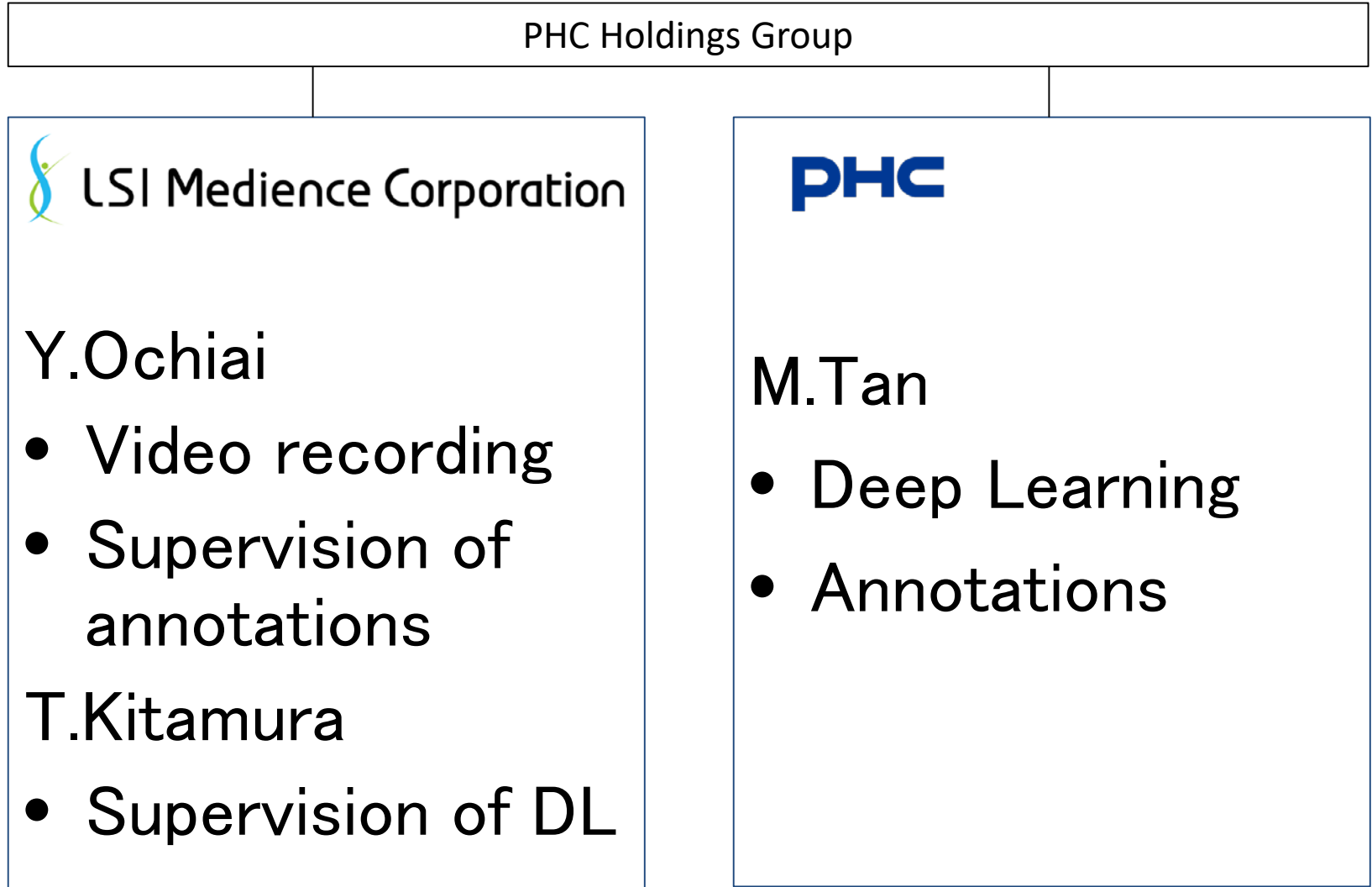
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Purpose

- The goal of this study is to develop a deep learning model that can classify toxic features such as changes in activity level, abnormal posture, ataxia, vomiting and nausea from videos recorded for a long period of time in normal cages with a shield.
- As a preliminary step, we herein report on monkey pose estimation.

Project structure



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Pishchulin updated readme

1 contributor

87 lines (72 sloc) 3.86 KB

Deep(er)Cut: Multi

This short documentation describes `lts` and `DeeperCut` papers:

Leonid Pishchulin, Eldar Insafutdinov, Bernt Schiele
 DeeperCut: Joint Subset Partition and L
 In *IEEE Conference on Computer Vision*

Eldar Insafutdinov, Leonid Pishchulin, DeeperCut: A Deeper, Stronger, and F
 In *European Conference on Computer inf.mpg.de*

Prerequisites

- This code was developed under Li
- HDFS 1.8
- CMake
- C++ 11
- CUDA >=7.5
- Caffe building instructions
- Gurobi optimizer 6.0.x

Installation Instructions

- Clone repository


```
$ git clone https://github.com
```
- Build Caffe and its MATLAB interfa


```
$ cd external/caffe
$ make -j 4 all matcaffe
```
- Build `liblinear`, specify the path


```
$ cd external/liblinear-1.94/n
```

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MMathisLab Create python-package.yml (#795) Latest commit e8492a3 on 10 Jul

4 contributors

191 lines (145 sloc) 10.8 KB

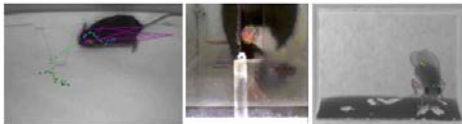
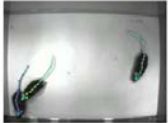
code style: black Python package: packaging pip package: 2.1.4 PyPI: 2.6k/month Stars: 1.8k Forks: 847

Contributors: Welcome License: LGPL v2 forum: 521 topics chat: on gitter DeepLabCut: 6.1k



DeepLabCut: a software package for animal pose estimation

www.deeplabcut.org

DeepLabCut is a toolbox for markerless pose estimation of animals performing various tasks. [Read a short development and application summary below.](#) ❤️ DeepLabCut now supports multi-animal pose estimation (beta release).

Installation: how to install DeepLabCut

Documentation: The DeepLabCut Process

An overview of the pipeline and workflow for project management. For a step-by-step user guide, please also read the [Nature Protocols paper](#)

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leoxiaobin Update README.md Latest commit #97406f on 15 Jul

4 contributors

271 lines (226 sloc) 13 KB

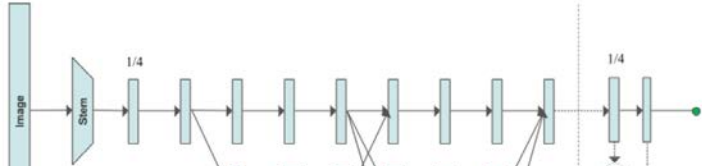
HigherHRNet: Scale-Aware Representation Learning for Bottom-Up Human Pose Estimation (CVPR 2020)

News

- [2020/07/05] [A very nice blog](#) from Towards Data Science introducing HRNet and HigherHRNet for human pose estimation.
- [2020/03/12] Support train/test on the CrowdPose dataset.
- [2020/02/24] HigherHRNet is accepted to CVPR2020!
- [2019/11/23] Code and models for [HigherHRNet](#) are now released!
- [2019/08/27] HigherHRNet is now on [ArXiv](#). We will also release code and models, stay tuned!

Introduction

This is the official code of [HigherHRNet: Scale-Aware Representation Learning for Bottom-Up Human Pose Estimation](#). Bottom-up human pose estimation methods have difficulties in predicting the correct pose for small persons due to challenges in scale variation. In this paper, we present **HigherHRNet**: a novel bottom-up human pose estimation method for learning scale-aware representations using high-resolution feature pyramids. Equipped with multi-resolution supervision for training and multi-resolution aggregation for inference, the proposed approach is able to solve the scale variation challenge in *bottom-up multi-person* pose estimation and localize keypoints more precisely, especially for small person. The feature pyramid in HigherHRNet consists of feature map outputs from HRNet and upsampled higher-resolution outputs through a transposed convolution. HigherHRNet outperforms the previous best bottom-up method by 2.5% AP for medium person on COCO test-dev, showing its effectiveness in handling scale variation. Furthermore, HigherHRNet achieves new state-of-the-art result on COCO test-dev (70.5% AP) without using refinement or other post-processing techniques, surpassing all existing bottom-up methods. HigherHRNet even surpasses all top-down methods on CrowdPose test (67.6% AP), suggesting its robustness in crowded scene.



Condition

- Our regular breeding condition.
 - Monkey in cage.
 - ✓ Cage make pose estimation difficult.
 - ✓ Monkey is so curious that he touch the camera.
 - ✓ For long time recording.

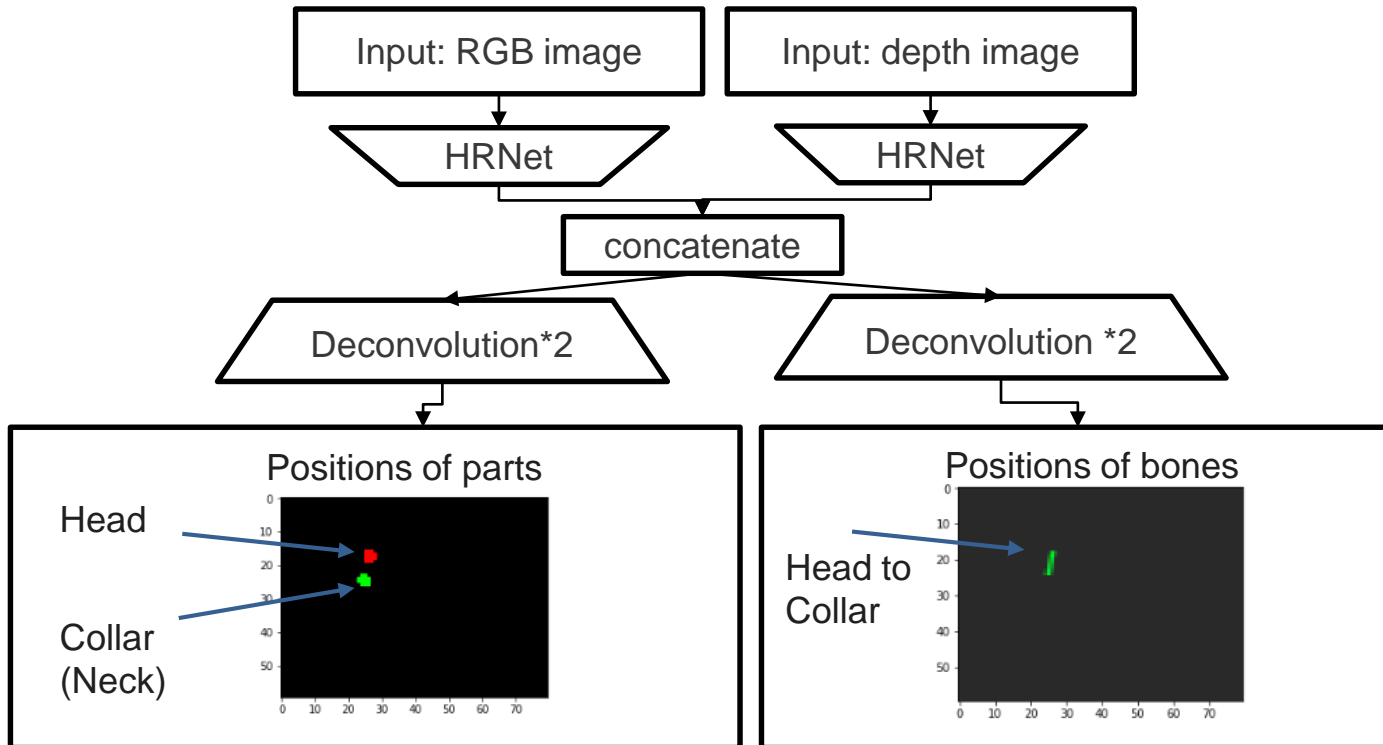
Approach

- RGB and Depth Camera
 - Active IR Stereo
 - The active IR camera can shoot dark areas in the back of the cage.

Dataset

- Still images cut out from RGB + depth videos were clustered by image pattern, and still images were selected evenly from each cluster.
- Clustered image number: 100,000
- Annotated image number: 150
 - Training image number: 83
 - Test image number: 21
- Annotation: head, collar(neck), left hand, right hand, left foot, right foot.

Network structure

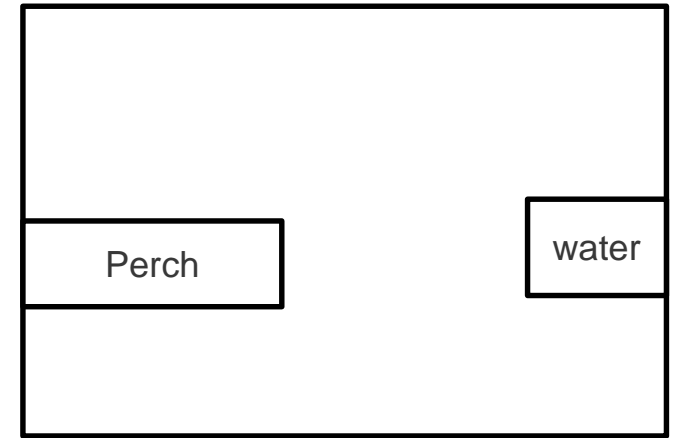
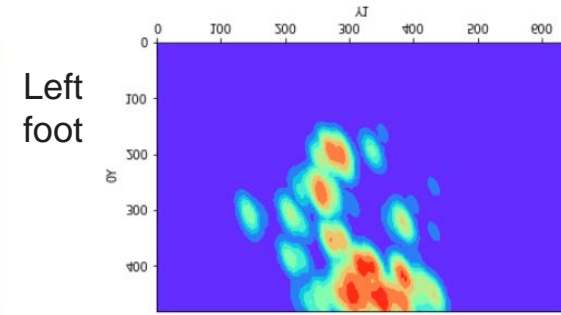
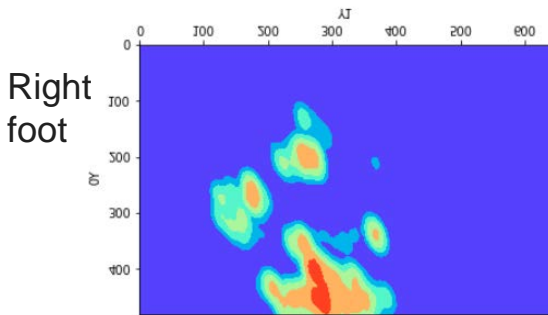
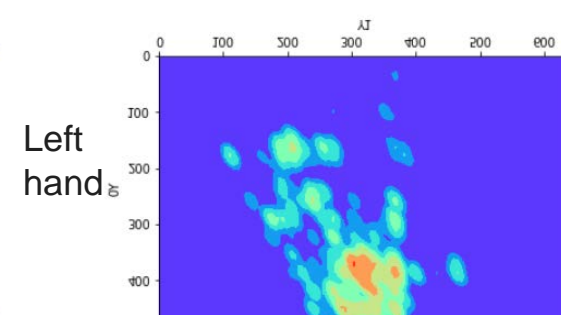
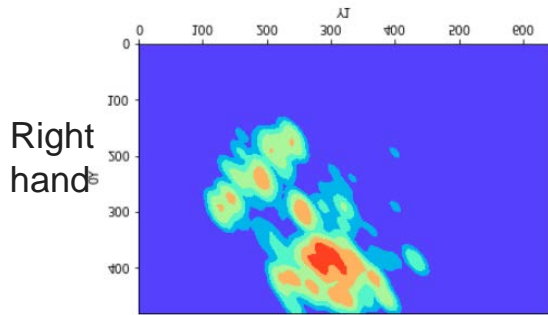
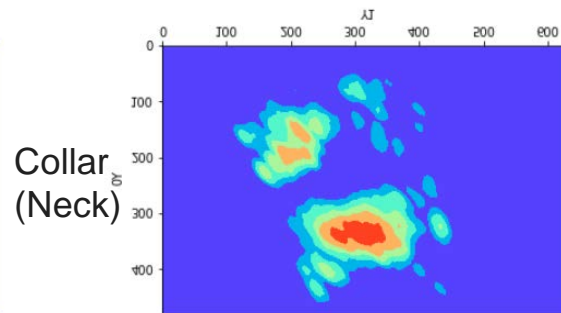
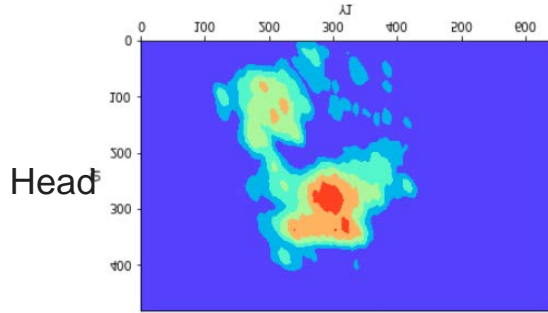


Result

- **Test accuracy: 94% (In the same individual)**

Result

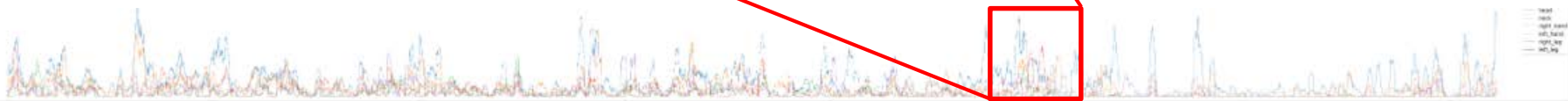
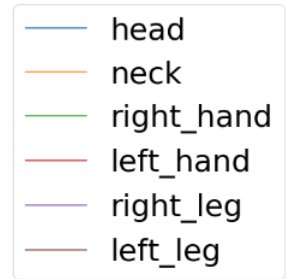
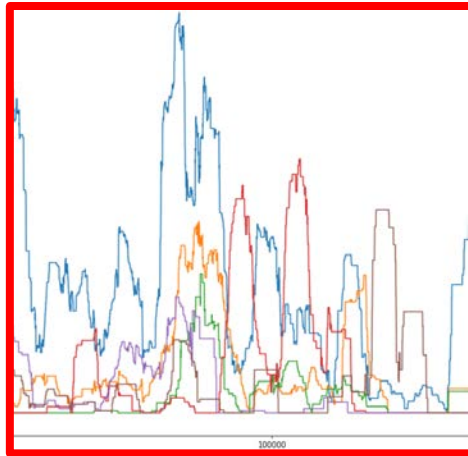
Heat map for parts position (log scale)



For 1.34 hour

Result: Amount of movement

Point is moving average of
30 sec



For 1.34 hour

Conculusion

- It is possible to estimate the posture in normal cage for several hours with a model that has learned the annotation of 150 images.
- Momentum can be analyzed.

Feature plan

- Pose estimation for multiple monkeys.
- Detection of side effects of drugs that act on the nervous system.