Articulated Pose Estimation with Deep Convolutional Neural Networks

First Author
Institution1
Institution1 address
firstauthor@i1.org

Second Author
Institution2
First line of institution2 address
secondauthor@i2.org

Abstract

1. Introduction

- Pose Estimation popular and challenging
- Deep Convolutional Neural Networks
- Flexible Mixtures of Parts Model
- Deformable Part Models is Neural Network
- HOG feature

2. Related Work

3. The Model

3.1. Deconvolutional Neural Networks

- Fully Connected Layer
- Max Pooling Layer
- Convolutional Layer
- Rectified Linear Layer
- General Layer

4. Inference

- Discrete activiation hidden variables
- Continuous acitivation hidden variables
- Iterativ Method for Inference

5. Learning

- EM for discrete activiation hidden variables
- EM for continuous acitviation hidden variables

5.1. Learning Unary Terms

5.2. Learning Pairwise Terms

5.3. Joint learning

5.4. Latent Update

6. Experiments

6.1. Dataset

6.2. Experiment Details

- Only set feedback on RELU layer
- Train multi-class feedback model with hidden variable sharing

6.3. Visualization of feedbacks

A figure shows Feedback vs No-Feedback visualization on fc8

Key story: Feedback surpress noise and extract salient part region and contexts

6.4. Where to Add Feedback

A figure shows Feedback vs No-Feedback visualization on conv5 etc.

Key story: 1. Not all layers need feedback 2. Feedback surpress noisefor high level layers

6.5. Are the Activation Similar for different classes

A figure shows Feedback visualization on fc8 for different classes

Key story: 1. Feedbacks are different for different classes in the same image. 2. Some similar classes share similar feedbacks

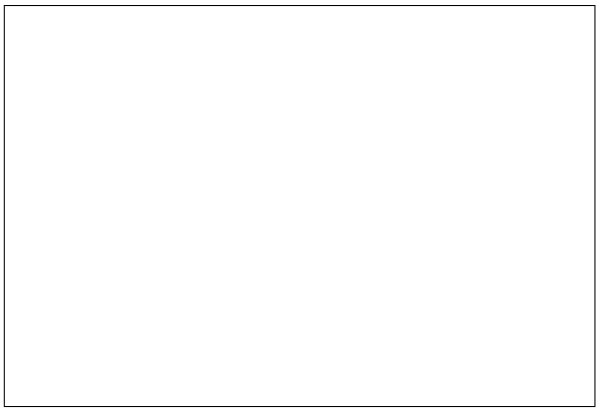

Figure 1. Example of caption. It is set in Roman so that mathematics (always set in Roman: $B \sin A = A \sin B$) may be included without an ugly clash.

Method	Frobnability
Theirs	Frumpy
Yours	Frobbly
Ours	Makes one's heart Frob

Table 1. Results. Ours is better.

6.6. Are feedback helpful for recognition?

6.7. Are feedback useful for localization

A figure shows Feedback visualization for different object classes for the same image (a little similar to above)

6.8. Are feedback robust to noise

A figure shows Feedback visualization for an image producing a different class label than ground truth (similar as the ïntriguing propertyp̈aper)

6.9. How iterative update changes visualization

A figure shows the visualization with update iteration

6.10. Are feedback helpful for multi-task learning?

Finally, you may feel you need to tell the reader that more details can be found elsewhere, and refer them to a technical report. For conference submissions, the paper must stand on its own, and not *require* the reviewer to go to a techreport for further details. Thus, you may say in the body of the paper "further details may be found in [1]". Then submit the techreport as additional material. Again, you may not assume the reviewers will read this material.

References

[1] Authors. Frobnication tutorial, 2014. Supplied as additional material `tr.pdf`.

Figure 2. Example of caption. It is set in Roman so that mathematics (always set in Roman: $B \sin A = A \sin B$) may be included without an ugly clash.