Jiali Duan

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https://davidsonic.github.io/index

Research Interests

Computer Vision: Deep Learning, Reinforcement-learning

Education

University of Chinese Academy of Sciences Beijing, China
M.S. Computer Science Sep. 2014 – June. 2017(expected)

- Nominated for National Award (Top %2) in UCAS
- Advisor: Prof. Stan Z. Li and Shengcai Liao(Institute of Automation, Chinese Academy of Sciences)

East China University of Science and Technology Shanghai, China
B.E. Information Engineering Sep. 2010 – Jun. 2014

- Thesis: Research on Object Detection and Tracking Algorithms for Computer Vision

Research Experience

Gesture Recognition Institution of Automation, Chinese Academy of Sciences
July. 2016 – August. 2016 Center for Biometrics and Security Research

- Pre-trained a Faster-RCNN model for hand detection.
- Proposed a sequence based temporal segmentation algorithm for continuous gesture extraction.
- Hog feature and pair-wise skeleton structure are used to extract features from hand regions.
- Proposed a two-stream RNN for RGB and Depth Video, which are further concatenated by a 2-layered LSTM implemented using Keras.
- The Algorithm ranked 1st in Chalearn LAP Large-Scale Continuous Gesture Recognition Challenge on Codalab.
- I also implemented a 3D-convolution + SVM model for the challenge.

Face Classification Benchmark Institution of Automation, Chinese Academy of Sciences
June. 2016 – July 2016 Center for Biometrics and Security Research

- Constructed a Face Classification Benchmark using a fine-tuned RPN network on WIDER FACE.
- Compared the performance of hand-crafted feature extraction methods such as LOMO, LBP, MB-LBP, NPD using DQT+boosting with state-of-the-art end to end Convolutional Neural Networks using Cifar-10 based CNN and Cascaded CNN following the paradigm of 2015 CVPR Paper (re-implemented).
- The paper was accepted as Oral representation in CCBR 2016.

Face Detection Institution of Automation, Chinese Academy of Sciences
March. 2016 – June 2016 Center for Biometrics and Security Research

- Proposed a novel component-based face detection framework that deals with occlusions and pose-variations simultaneously.
- Component-invariant mapping is proposed to handle the tricky issue of defining facial components under various poses and scales.
- Proposed a Local competition and Aggregation method for eliminating false positives.
- Symmetric detection is proposed to obviated the need for extra-training.
- The paper was accepted in ACCV Workshop 2016.

ResNet Classification Institution of Automation, Chinese Academy of Sciences
March. 2016 – April. 2016 Center for Biometrics and Security Research

- Reproduce the result of ResNet-56 on Cifar10 with 92.54% accuracy using Caffe.
- Reproduce the result of ResNet-101 on ImageNet 1K with 6.58% top-5 error using Caffe.

Face Liveness Detection Institution of Automation, Chinese Academy of Sciences
Sep. 2015 – March. 2016 Center for Biometrics and Security Research

Phase I:

- Trained a Fast-RCNN face detection model that achieves an AP of 0.93 on FDDB for face detection.
- Pre-trained a 85 facial-landmark SDM model for face alignement.
- Implemented a motion-based algorithm for face liveness detection.

Phase II:

- Reformulate Face-Liveness as a 3-class classification problem.
- Proposed to combine optical-flow and VGG features for face representation to deal with static image and video attacks respectively.
- All the algorithms are then embedded into Android using JNI.

Face Recognition Institution of Automation, Chinese Academy of Sciences
Oct. 2015 – Jan. 2016 Center for Biometrics and Security Research

- Re-trained a DeepID model using CASIA-WEBFACE that achieves 95.47% accuracy with Joint Bayesian metric and 93.95% accuracy with Cosine metric.
- Re-implement the data layer, loss layer and normalization layer for DeepID2 that achieves 97.9% accuracy on LFW.
- Participated in improving 1:N and N:1 face verification algorithm of AuthenMetric.

Multi-task Face Attribute Analysis Institution of Automation, Chinese Academy of Sciences
Aug. 2015 – Oct. 2015 Center for Biometrics and Security Research

- Gender Classification demo using CNN.
- Age prediction demo using CNN.
- Smile prediction demo using CNN.
- All the training data are collected from imdb using Scrapy.
- Multi-task Face Attribute demo displayed using flask and tornado web-framework. All the demos are available on my personal github-page.

Person-Reidentification Institution of Automation, Chinese Academy of Sciences
July. 2015 – Sep. 2015 Center for Biometrics and Security Research

- Reproduce LOMO, BoW features and XQDA, MLAPG, KISSME metric learning methods on Market-1501 database and experimented different hyper-parameters when makeing single query and multi-query evaluations.
- Collect an experimental person-reidentification dataset with a wide range of poses and appearances of pedestrians using Drones.

Palm Recognition System Institution of Automation, Chinese Academy of Sciences
May. 2015 – July. 2015 Center for Biometrics and Security Research

- Experimented SIFT, SURF, and FLANN for feature representation and matching.
- Implemented an Android interaction interface to take hand pictures.
- A C# service was implemented to match the uploaded image with hands stored in SQL for palm recognition.

Publications

1. **Jiali Duan**, Shuai Zhou, Jun Wan, Xiaoyuan Guo, Stan Z.Li. *Multi-Modality Fusion based on Consensus-Voting and 3D Convolution for Isolated Gesture Recognition.* **CVPR, 2017, Submitted**

2. **Jiali Duan,** Shengcai Liao, Shuai Zhou**,** Stan Z. Li. *Face Classification, A Specialized Benchmark Study*. **CCBR, 2016, Best Student Paper.**

3. **Jiali Duan,** Shengcai Liao, Xiaoyuan Guo**,** Stan Z. Li. *Face Detection by Aggregating Visible Components.* **ACCV Workshop, 2016, Oral**

Competitions

- Second-place for English Speaking Competition in University of Chinese Academy of Sciences. Dec, 2014
- Honorable Mention in MCM/ICM Math Modeling Contest for American College Students. March, 2013
- Outstanding Prize for 21st Century Coca-Cola Cup National English Speaking Competition in ECUST and third prize in Shanghai Final. Dec, 2012
- Second Prize in National Mathematical Modeling Contest. May, 2012
- First Prize in Mathematical Modeling Contest in Shanghai. March, 2012
- First Prize for Extemporaneous English Speaking Competition in ECUST Dec, 2011
- More competition awards are available on my homepage.

Certificates and Honors

- Nominated for National Award (top 2%) in the University of Chinese Academy of Sciences. Sep. 2016
- Second Prize Scholarship in University of Chinese Academy of Sciences (Twice) Sep. 2015/2016
- Merit Student (Top 3%) of University of Chinese Academy of Sciences (Twice) Mar. 2015/2016
- Advanced-Level English Interpretation Accreditation Certificate (8% anually). June.2014
- More awards are available on my homepage.

Standardized Tests

TOEFL: Reading 28, Listening 27, Speaking 23, Writing 30, Total 108.
GRE General: Verbal 156, Analytical Writing 4.0