

Jinzhao Wang

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Education

PKU (Peking University)

Beijing, China

PH.D. CANDIDATE IN ELECTRONICS ENGINEERING AND COMPUTER SCIENCE

Sep. 2013 - Exp. May. 2019, GPA: 3.8/4.0

- Thesis: Collaborative Deep Learning and its Applications to Video Analysis
- Supervisor: Professor Wen Gao and Wenmin Wang
- Description: This thesis presents a collaborative learning paradigm for bidirectional assistance of multiple agents and applies it to deep neural architectures, achieving a generic collaborative deep learning model. The proposed model demonstrates effectiveness on a variety of video analysis tasks, including video recognition, prediction and generation.

PKU (Peking University)

Beijing, China

B.S. IN ELECTRONICS ENGINEERING AND COMPUTER SCIENCE

Sep. 2009 - Jun. 2013, GPA: 3.5/4.0

- Thesis: Static Board Analysis in Modern Computer Go
- Supervisor: Professor Yanchun Sun
- Description: This thesis presents a series of novel methods for static board analysis in computer Go. The key contribution is formulating the influence of territories and areas and providing solutions to calculate *mu* for both. Based on static board analysis of current situation and next possible situations, one can achieve strategy for the next move.

Research Interests

COMPUTER VISION

- Action recognition/detection, Video prediction/generation, Image classification, Object detection, Sleep stage classification

MACHINE LEARNING

- Collaborative learning of multiple deep neural networks, Interpretation of deep neural networks, Multi-task learning, Computer Go

Experience and Projects

IBME in University of Oxford

Oxford, UK

POSTDOCTORAL RESEARCH ASSISTANT, SUPERVISOR: PROF. MAARTEN DE VOS

July. 2019 - Present

I work as a postdoctoral researcher in CIBIM lab for the task of **sleep stage classification**. I design deep segment network architecture in pytorch to investigate relations between stage distribution and multivariate time-series sleep signals (EEG, ECG and EOG).

Microsoft Research Asia

Beijing, China

RESEARCH ASSISTANT, SUPERVISOR: PROF. CHONG LUO AND PROF. WENJUN ZENG

Aug. 2018 - Mar. 2019

I design and implement algorithms for the task of **action detection in video** in project "Deep Video Analytics".

Digital Media Center in Peking University

Shenzhen, China

RESEARCH ASSISTANT, SUPERVISOR: PROF. WENMIN WANG, PROF. RONGGANG WANG AND PROF. GE LI

Sep. 2016 - Jun. 2017

I lead the computer vision group solving the tasks of 1) **video prediction** and 2) **collaborative learning for multiple neural nets**.

Intelligent Multimedia and Virtual Reality

China

GRANT NO.20170302173036437

Apr. 2016 - Jun. 2016

Design and implement **collaborative deep learning** paradigm that enables bidirectional assistance of multiple deep neural nets in terms of fast convergence and performance improvement. Solutions were published on ACM MM 2017 and BigMM 2017.

Immersive Video Generation and Efficient Coding for Virtual Reality

China

NATURAL SCIENCE FOUNDATION OF CHINA (NSFC) No.61672063

Oct. 2015 - Mar. 2016

Design and implement **video prediction and generation** algorithms by learning object-centric transformations instead of pixel evolutions. Solutions were published on ACM MM 2017.

Chinese Graduate Video Analysis Challenge

Wuhan, China

THREE COMPUTER VISION TASKS

Jul. 2015

Our team won the first place in **object detection in single camera**, the first place in **pedestrian tracking across cameras** and the third place in **anomaly detection in video**. Solutions are published at ICIP 2015 and ICIP 2016.

TREC Video Retrieval Evaluation (TRECVID) Challenge

Online

SEMANTIC INDEXING (SIN)

Jan. 2014

Our team won the fourth place in the task of **video semantic indexing**. Solutions are published on ICIP 2015.

Publications

Fast and Accurate Action Detection with Motion-Centric Attention Model

JINZHUO WANG, WENMIN WANG AND WEN GAO

IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), Vol:30, Issue:1, Pages: 117-130, **2020**.

Predicting Diverse Future Frames with Transformation-Guided Masking

JINZHUO WANG, WENMIN WANG AND WEN GAO

IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), Vol:29, Issue:12, Pages: 3531-3543, **2019**.

Multi-Scale Deep Alternative Neural Network for Large Scale Video Classification

JINZHUO WANG, WENMIN WANG AND WEN GAO

IEEE Transactions on Multimedia (TMM), Vol:20, Issue:10, Pages: 2578-2592, **2018**.

Beyond Knowledge Distillation: Collaborative Learning for Bidirectional Model Assistance

JINZHUO WANG, WENMIN WANG AND WEN GAO

IEEE Access, Vol:6, Pages:39490-39500 **2018**.

Beyond Monte Carlo Tree Search: Playing Go with Deep Alternative Neural Network and Long-Term Evaluation

JINZHUO WANG, WENMIN WANG, RONGGANG WANG AND WEN GAO

AAAI Conference on Artificial Intelligence (AAAI), San Francisco, California, USA, February 4-9, **2017**.

CSPS: An Adaptive Pooling Method for Image Classification

JINZHUO WANG, WENMIN WANG, RONGGANG WANG AND WEN GAO

IEEE Transactions on Multimedia (TMM), Vol:18, Issue:6, Pages:1000-1010, **2016**.

Deep Alternative Neural Network: Exploring Contexts as Early as Possible for Action Recognition

JINZHUO WANG, WENMIN WANG, RONGGANG WANG, XIONGTAO CHEN AND WEN GAO

Annual Conference on Neural Information Processing Systems (NIPS), Barcelona, Spain, December 5-10, **2016**.

Learning Class-Specific Pooling Shapes for Image Classification

JINZHUO WANG, WENMIN WANG, RONGGANG WANG AND WEN GAO

IEEE International Conference on Multimedia and Expo (ICME), Turin, Italy, June 29 - July 3, **2015**.

A Compact Shot Representation for Video Semantic Indexing

JINZHUO WANG, WENMIN WANG, RONGGANG WANG AND WEN GAO

IEEE International Conference on Image Processing (ICIP), Quebec City, QC, Canada, September 27-30, **2015**

Image Classification Using RBM to Encode Local Descriptors with Group Sparse Learning

JINZHUO WANG, WENMIN WANG, RONGGANG WANG AND WEN GAO

IEEE International Conference on Image Processing (ICIP), Quebec City, QC, Canada, September 27-30, **2015**.

Learning Object-Centric Transformation for Video Prediction

XIONGTAO CHEN, WENMIN WANG, WEIMIAN LI AND JINZHUO WANG

ACM Multimedia Conference (MM), Mountain View, CA, USA, October 23-27, **2017**.

Imagination on Image: Synthesizing Videos with Transformation Generation

BAOYANG CHEN, WENMIN WANG AND JINZHUO WANG, XIONGTAO CHEN

ACM Multimedia Conference (MM), Mountain View, CA, USA, October 23-27, 2017.

Collaborative Networks for Person Verification

YIHAO ZHANG, WENMIN WANG, JINZHUO WANG

ACM Multimedia Conference Workshop on Multimedia Verification (MM Workshop), Mountain View, CA, USA, October 23-27, 2017.

Aligned Local Descriptors and Hierarchical Global Features for Person Re-Identification

YIHAO ZHANG, WENMIN WANG, JINZHUO WANG

Pacific Rim Conference on Multimedia (PCM), Harbin, China, September 28-29, 2017.

Deep discriminative network with inception module for person re-identification

YIHAO ZHANG, WENMIN WANG, JINZHUO WANG

IEEE Visual Communications and Image Processing (VCIP), St. Petersburg, FL, USA, 10-13 Dec, 2017.

Better Deep Visual Attention with Reinforcement Learning in Action Recognition

GANG WANG, WENMIN WANG, JINZHUO WANG AND YAOHUA BO

IEEE International Symposium on Circuits and Systems (ISCAS), Baltimore, MD, USA, 28-31 May, 2017.

A Joint Model for Action Localization and Classification in Untrimmed Video with Visual Attention

WEIMIAN LI, WENMIN WANG AND JINZHUO WANG

IEEE International Conference on Multimedia and Expo (ICME), Hong Kong, China, 10-14 July, 2017

Long-Term Video Interpolation with Bidirectional Predictive Network

XIONGTAO CHEN, WENMIN WANG AND JINZHUO WANG, WEIMIAN LI, BAOYANG CHEN

IEEE International Conference on Visual Communications and Image Processing (VCIP), St. Petersburg, FL, USA, 10-13 Dec, 2017

Attention-based Two-phase Model for Video Action Detection

XIONGTAO CHEN, WENMIN WANG, WEIMIAN LI AND JINZHUO WANG

17th International Conference on Computer Analysis of Images and Patterns (CAIP), Ystad, Sweden, August 22-24, 2017

Collaborative Deep Networks for Pedestrian Detection

HONGMENG SONG, WENMIN WANG AND JINZHUO WANG

IEEE International Conference on Multimedia Big Data (BigMM), Laguna Hills, CA, USA, 19-21 April, 2017. **Best Paper Award**

Tube ConvNets: Better Exploiting Motion for Action Recognition

ZHIHAO LI, WENMIN WANG, NANNAN LI AND JINZHUO WANG

IEEE International Conference on Image Processing (ICIP), Phoenix, AZ, USA, 25-28 Sept, 2016

Honors & Awards

2015-2016 , National Scholarship of China

China

2009-2013 , Champion of PKU-THU (Go) Competition

China

2003-2004 , Champion of National Championship of (Go)

China

2015-2016 , Talent Scholarship of Peking University

Peking University

2013-2018 , School Scholarship of Peking University

Peking University

2016-2017 , Academic Innovation Award of Peking University

Peking University

2014-2015 , Merit Student of Peking University

Peking University

Skills

PROGRAMMING LANGUAGES AND TOOLS

- C/C++, Python, Matlab, R, Java, Lua, \LaTeX
- Proficient in OpenCV, Git, PyTorch, Torch7 and Tensorflow
- Experience with Caffe, Caffe2, MXNet, MatConvNet, Sklearn

SPECIALTY

- Go: 6 dan level. I was selected to Chinese Chess Academy and received ten years of professional training in Go since the age of 5

References

Wen Gao

MEMBER OF CHINESE ACADEMY OF ENGINEERING, IEEE FELLOW, ACM FELLOW

Professor, Peking University

wgao@pku.edu.cn

Wenmin Wang

Professor, Peking University

wangwm@ece.pku.edu.cn

Wenwu Zhu

IEEE FELLOW, SPIE FELLOW AND ACM DISTINGUISHED SCIENTIST

Professor, Tsinghua University

wwzhu@tsinghua.edu.cn