

# Jinzhao Wang

PH.D. CANDIDATE · COMPUTER SCIENCE

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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, Person re-identification

### MACHINE LEARNING

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

## Publications

### Fast and Accurate Action Detection with Motion-Centric Attention Model

JINZHAO WANG, WENMIN WANG AND WEN GAO

IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), 2018. DOI:10.1109/TCSVT.2018.2887061

### Predicting Diverse Future Frames with Transformation-Guided Masking

JINZHAO WANG, WENMIN WANG AND WEN GAO

IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), 2018. DOI:10.1109/TCSVT.2018.2882061

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

JINZHAO WANG, WENMIN WANG AND WEN GAO

IEEE Transactions on Multimedia (TMM), 2018. DOI:10.1109/TMM.2018.2855081

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

JINZHAO WANG, WENMIN WANG, RONGGANG WANG AND WEN GAO

AAAI Conference on Artificial Intelligence (AAAI), 2017

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

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

Annual Conference on Neural Information Processing Systems (NIPS), 2016

## **Beyond Knowledge Distillation: Collaborative Learning for Bidirectional Model Assistance**

JINZHUO WANG, WENMIN WANG AND WEN GAO

IEEE Access, 2018. DOI:10.1109/ACCESS.2018.2854918

## **CSPS: An Adaptive Pooling Method for Image Classification**

JINZHUO WANG, WENMIN WANG, RONGGANG WANG AND WEN GAO

IEEE Transactions on Multimedia (TMM), 2016. DOI:10.1109/TMM.2016.2544099

## **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), 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), 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), 2015

## **Learning Object-Centric Transformation for Video Prediction**

XIONGTAO CHEN, WENMIN WANG, WEIMIAN LI AND JINZHUO WANG

ACM Multimedia Conference (MM), 2017

## **Imagination on Image: Synthesizing Videos with Transformation Generation**

BAOYANG CHEN, WENMIN WANG AND JINZHUO WANG, XIONGTAO CHEN

ACM Multimedia Conference (MM), 2017

## **Collaborative Networks for Person Verification**

YIHAO ZHANG, WENMIN WANG, JINZHUO WANG

ACM Multimedia Conference Workshop on Multimedia Verification (MM Workshop), 2017.

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

YIHAO ZHANG, WENMIN WANG, JINZHUO WANG

Pacific Rim Conference on Multimedia (PCM), 2017.

## **Deep discriminative network with inception module for person re-identification**

YIHAO ZHANG, WENMIN WANG, JINZHUO WANG

IEEE Visual Communications and Image Processing (VCIP), 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), 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), 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), 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), 2017

## Collaborative Deep Networks for Pedestrian Detection.

HONGMENG SONG, WENMIN WANG AND JINZHUO WANG

IEEE International Conference on Multimedia Big Data (BigMM), 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), 2016

## Experience and Projects

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### Microsoft Research Asia

*Beijing, China*

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

*Aug. 2018 - Present*

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

### Digital Media Center of 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.

## Honors & Awards

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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

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### PROGRAMMING LANGUAGES AND TOOLS

- C/C++, Python, Matlab, R, Java, Lua, ~~TeX~~
- 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

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### 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*