

# Jinzhao Wang

☎ (+44) 75798-47131 | ✉ jinzhao.wang@ndcn.ox.ac.uk | 🌐 www.wangjinzhao.com

## Education

### Peking University

Beijing, China

PH.D. IN COMPUTER SCIENCE

Sep. 2013 - Jul. 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.

### Peking University

Beijing, China

B.S. IN COMPUTER SCIENCE

Sep. 2009 - Jul. 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, Spatio-temporal feature learning, Image classification, Object detection

### MACHINE LEARNING

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

## Experience and Projects

### NDCN in University of Oxford

Oxford, UK

POSTDOCTORAL RESEARCH ASSOCIATE, SUPERVISOR: PROF. MICHELE HU

April 2020 - April 2021 exp.

I work as a postdoctoral researcher in NDCN for the task of **sleep stage classification** and **RBD detection**. I applied the proposed SegNet for standard PSG data and wearable data, providing sleep quality analysis and RBD detection prediction. Solutions are submitted to IEEE Transactions on biomedical engineering.

### IBME in University of Oxford

Oxford, UK

POSTDOCTORAL RESEARCH ASSOCIATE, SUPERVISOR: PROF. MAARTEN DE VOS

July. 2019 - April 2020

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

### 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

---

### More Information Supervised Probabilistic Deep Face Embedding Learning

YING HUANG, SHANGFENG QIU, WENWEI ZHANG, XIANGHUI LUO, **JINZHUO WANG**

International Conference on Machine Learning (ICML), 2020.

### 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**

ZIHAO 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,  $\text{\LaTeX}$
- 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*

### Michele Hu

DEPUTY HEAD OF THE DIVISION OF CLINICAL NEUROLOGY

*Professor, University of Oxford*

*michele.hu@ndcn.ox.ac.uk*

### Maarten De Vos

*Professor, KU Leuven*

*maarten.devos@kuleuven.be*