

# Cheng Zhang

✉ zhang.7804@osu.edu, czhang0528@gmail.com 🌐 <https://czhang0528.github.io/>

## Research Interests

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Machine learning and its applications to computer vision, vision and language, and mobile computing

## Education

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- **The Ohio State University (OSU)**, OH, USA  
Ph.D. in Computer Science and Engineering Jan. 2017 - present  
Advisors: Dong Xuan and Wei-Lun Chao
- **Beijing University of Posts and Telecommunications (BUPT)**, Beijing, China  
M.S. in Computer Science Mar. 2016  
Advisor: Huadong Ma
- **Tianjin University (TJU)**, Tianjin, China  
B.Eng. in Computer Software Jun. 2013  
Advisor: Wei Feng

## Professional Experience

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- **The Ohio State University**, Columbus, OH Jan. 2017 - present  
*Research/Teaching Associate, Advisors: Harry Chao and Dong Xuan*
  - Long-tailed visual recognition
  - Self-supervised object detection
  - Robust visual question answering
  - Novel sensing system over new wireless, e.g., vision and ultrasound
- **Volvo Cars AI Research**, Sunnyvale, CA June 2020 - Aug. 2020  
*Research Intern, Mentors: Sihao Ding and Saudin Botonjic*
  - Model snapshots ensemble for LiDAR-based object detection at various ranges
- **FX Palo Alto Laboratory (FXPAL)**, Palo Alto, CA May 2019 - Aug. 2019  
*Research Intern, Mentors: Francine Chen and Yan-Ying Chen*
  - Chest X-ray disease identification and localization (BMVC'20, patent pending)
- **DeepCode Robotics**, Shanghai May 2018 - Aug. 2018  
*Research Intern, Mentors: Fan Yang and Qiang Zhai*
  - Object trajectory prediction and action recognition for sports analysis (INFOCOM'18)
- **Institute of Internet of Things, BUPT**, Beijing Sept. 2013 - Dec. 2016  
*Research Assistant, Advisor: Huadong Ma*
  - Contrastive learning for gait-based person identification in video surveillance (ICASSP'16)
  - Urban air quality measurement via crowdsensing images (UbiComp'18)
- **Alibaba Vision Lab (currently DAMO Academy)**, Beijing Jul. 2015 - Sept. 2015  
*Algorithm Engineer Intern, Mentors: Xian-Sheng Hua and Pan Pan*
  - Large-scale image categorization for PaiLiTao (the visual search service on Mobile Taobao)
- **Visual Intelligence Lab, TJU**, Tianjin Sept. 2011 - Jun. 2013  
*Research Assistant, Advisor: Wei Feng*
  - Superpixel gridization for fast object localization and segmentation (patent granted)

## Publications

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### Tech. Reports / Under Review

- T2 Yuxiang Luo, **Cheng Zhang**, Yunqi Zhang, Chaoshun Zuo, Dong Xuan, Zhiqiang Lin, Adam C. Champion and Ness Shroff, "Acoustic-Turf: Acoustic-based Privacy-Preserving COVID-19 Contact Tracing", under review, 2020.
- T1 **Cheng Zhang**, Soravit Changpinyo, Dong Xuan, Wei-Lun Chao, "Train One, Get Many: Question-Conditioned Post-Calibration for Debiasing Visual Question Answering Models", under review, 2020.

### Conference Proceedings

- C5 **[BMVC'20] Cheng Zhang**, Francine Chen, Yan-Ying Chen, "Thoracic Disease Identification and Localization using Distance Learning and Region Verification", in Proceedings of British Machine Vision Conference, Manchester, UK, Sept 2020.
- C4 **[BMVC'19] Cheng Zhang**, Wei-Lun Chao, Dong Xuan, "An Empirical Study on Leveraging Scene Graphs for Visual Question Answering", in Proceedings of British Machine Vision Conference (**Oral**), Cardiff, UK, Sept 2019.
- C3 **[INFOCOM'18] Cheng Zhang**, Fan Yang, Gang Li, Qiang Zhai, Yi Jiang, Dong Xuan, "MV-Sports: A Motion and Vision Sensor Integration-Based Sports Analysis System", in Proceedings of IEEE International Conference on Computer Communications, Honolulu, HI, USA, Apr 2018.
- C2 **[IMWUT/UbiComp'18] Liang Liu, Wu Liu, Yu Zheng, Huadong Ma, Cheng Zhang**, "Third-Eye: A Mobilephone-Enabled Crowdsensing System for Air Quality Monitoring", in Proceedings of ACM International Joint Conference on Pervasive and Ubiquitous Computing, Singapore, Oct 2018.
- C1 **[ICASSP'16] Cheng Zhang**, Wu Liu, Huadong Ma, Huiyuan Fu, "Siamese Neural Network based Gait Recognition for Human Identification", in Proceedings of IEEE International Conference on Acoustics, Speech and Signal Processing, Shanghai, China, Mar 2016.

### Journal Articles

- J3 **[NI'18] Wu Liu, Cheng Zhang**, Huadong Ma, Shuangqun Li, "Learning Efficient Spatial-Temporal Gait Features with Deep Learning for Human Identification", Neuroinformatics, 2018, 16(3-4): 457-471.
- J2 **[NC'16] Zheng Zhang, Huadong Ma, Huiyuan Fu, Cheng Zhang**, "Scene-free Multi-class Weather Classification on Single Images", Neurocomputing, 2016, 207: 365-373.
- J1 **[MIS'16] Zheng Zhang, Huadong Ma, Huiyuan Fu, Liang Liu, Cheng Zhang**, "Outdoor Air Quality Level Inference via Surveillance Cameras", Mobile Information Systems, 2016.

### Patents

- P5 **Cheng Zhang**, Sihao Ding, et al, "Model Snapshots Ensemble for LiDAR-based Object Detection at Various Ranges", US Patent, pending.
- P4 **Cheng Zhang**, Francine Chen, Yan-Ying Chen, "System and Method for Identification and Localization of Images Using Triplet Loss and Predicted Regions", US Patent, pending.
- P3 Dong Xuan, Ness Shroff, Yuxiang Luo, **Cheng Zhang**, Yunqi Zhang, "Privacy-preserving Acoustic Signal based Encounter Detection in Physical Proximity", US Patent, pending.
- P2 Huadong Ma, Wu Liu, Huiyuan Fu, **Cheng Zhang**, "Method and Device for Gait Recognition", US Patent, 9633268.
- P1 Wei Feng, Liang Wan, Jiawan Zhang, Liang Li, **Cheng Zhang**, "Maximum Cohesive Superpixel Grid for Fast Object Localization and Segmentation", CN103489185A.

## Theses

- MS **Cheng Zhang**, "Research on Key Techniques of Gait Recognition based on Deep Learning", Beijing University of Posts and Telecommunications (Outstanding thesis award), 2016.
- BS **Cheng Zhang**, "Minimum Topological Discrepancy Grid of Superpixels for Fast Object Localization", Tianjin University (Outstanding thesis award), 2013.

## Teaching Experience

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### Ph.D. at OSU

- CSE 3461 Computer Networking and Internet Technologies, GTA (80 students) Spring/Fall 2020
- CSE 1222 Programming in C++, Instructor (80 students) Spring/Fall 2019
- CSE 4471 Information Security, GTA (40 students) Fall 2018
- CSE 5432 Mobile Handset Systems and Networking, GTA (25 students) Fall 2018

### M.S. at BUPT

- Computer Graphics, GTA (40 students) Fall 2015

## Honors & Awards

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### Ph.D. at OSU

- CSE Annual Research Poster Exhibition Award (1st Place) 2020
- Student Travel Grant for IEEE INFOCOM 2018
- Special Recognitions for Outstanding Reviews at IMWUT 2017
- Third Place in CVPR LIP Multi-Human Pose Estimation Challenge 2018
- Third Place in CVPR LIP Single Person Pose Estimation Challenge 2017

### M.S. at BUPT

- Outstanding Master's Thesis (26 out of ~3000) 2016
- Student Travel Grant for IEEE ICASSP 2016
- Excellent Graduate, Beijing City 2016
- National Scholarship (1%), Ministry of Education, China 2015
- VMware Excellent Scholarship (1%) 2014

### B.S. at TJU

- Outstanding Undergraduate Thesis (5 out of 152) 2013
- Excellent Graduate 2013
- Hitachi Scholarship 2012
- Golden Award for the 8th Challenge Cup Innovation Competition, China 2012
- Weichai Power Scholarship (twice) 2010 2011

## Professional Activities

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### Conference TPC member/Reviewer

- AAAI (2021), BMVC (2020), ACM MM (2019,2020), ACM MM Asia (2019), IEEE ICME (2019), IEEE ICIP (2017-2020)
- IEEE INFOCOM (2019), IEEE GlobalSIP (2017,2018)
- ACL-IJCNLP (2020)

### Journal Reviewer

- ACM Transactions on Sensor Networks (ToSN)
- PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT)
- Machine Vision and Applications (MVA), Springer
- Multimedia Tools and Applications (MTAP), Springer