Cheng Zhang

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Research Interests

Machine learning and its applications to computer vision, natural language processing, and mobile sensing

Education

- **The Ohio State University (OSU)**, Ohio, United States
  Ph.D. in Computer Science and Engineering — Jan. 2017 - present
  Advisors: Wei-Lun Chao and Dong Xuan
- **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.S in Computer Software — Jun. 2013
  Advisor: Wei Feng

Professional Experience

- **Research/Teaching Associate**, The Ohio State University — Jan. 2017 - present
  - Vision and language: robust visual question answering with graph neural networks [C4] and conditional imbalanced-learning [T1]
  - Mobile sensing: multi-sensor system over new wireless (e.g., vision, light, and sound) [C3,C2]
- **Research Intern,** FX Palo Alto Laboratory, Palo Alto, CA, USA — May 2019 - Aug. 2019
  Mentors: Francine Chen and Yan-Ying Chen
  - Healthcare: weakly-supervised disease identification and localization in Chest-Xray images [T2,P3]
- **Research Intern,** DeepCode Robotics, Shanghai, China — May 2018 - Aug. 2018
  Mentors: Fan Yang and Qiang Zhai
  - Multi-sensor integration for sports analysis and robot planning [C3]
- **Research Assistant,** Center of Internet of Things, BUPT — Sept. 2013 - Mar. 2016
  Advisor: Huadong Ma
  - Gait recognition and human identification for video surveillance [C1,J3,P2]
  - Image-based air quality measurement [C2,J2,J1]
- **Algorithm Engineer Intern,** Alibaba Vision Lab (currently DAMO Academy) — Jul. 2015 - Sept. 2015
  Mentors: Xian-Sheng Hua and Pan Pan
  - Visual search: large-scale image categorization for Pailitao - the visual search service on Mobile Taobao
- **Research Assistant,** Visual Intelligence Lab, Tianjin Univ. — Sept. 2011 - Jun. 2013
  Advisor: Wei Feng
  - Superpixel gridization for fast object localization and segmentation [P1]

Publications

Technical Reports / Under Review

T2 **Cheng Zhang**, Francine Chen, Yan-Ying Chen, et al, "Weakly Supervised Thoracic Disease Identification

and Localization in Chest X-rays", 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

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

P3 **Cheng Zhang**, Francine Chen, Yan-Ying Chen, "System and Method for Identification and Localization of Diseases in Medical Images Using Triplet Loss and Predicted Regions", US Patent, filed.

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.

Professional Activities

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

Conference Reviewer
- ACM Multimedia 2019
- ACM Multimedia Asia 2019
- IEEE International Conference on Computer Communications (INFOCOM) 2019
- IEEE International Conference on Multimedia and Expo (ICME) 2019
- IEEE International Conference on Image Processing (ICIP) 2017, 2018, 2019
- IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2017, 2018

Teaching Experience

Ph.D. at OSU
- CSE 3461 Computer Networking and Internet Technologies, GTA (80 students) — Spring 2020
- CSE 1222 Programming in C++, Lecturer (80 students) — Spring and 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

Skills

Languages: C/C++, Python, Matlab, Scala, Shell, CUDA, JavaScript, SQL, etc.

Tools: OpenCV, Tensorflow, PyTorch, Caffe/Caffe2, Darknet, etc.

Honors & Awards

Ph.D. at OSU
- Student Travel Grant for IEEE Infocom 2018
- 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 2016
- Student Travel Grant for IEEE ICASSP 2016
- Excellent Graduate, Beijing City 2016
- National Scholarship, Ministry of Education, China 2015
- VMware Excellent Scholarship 2014

B.S. at Tianjin Univ.
- Outstanding Undergraduate Thesis 2013
- Excellent Graduate 2013
- Hitachi Scholarship 2012
- Golden Award for the 8th Challenge Cup Innovation Competition, China 2012
- Weichai Power Scholarship (twice) 2010 2011