

WEI-LUN (HARRY) CHAO

CONTACT INFORMATION

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CURRENT POSITION

Postdoctoral Associate with Computer Science, Cornell University, NY, USA Aug. 2018 – present

- Advisor: Prof. Kilian Weinberger and Prof. Mark Campbell

EDUCATION

University of Southern California (USC), CA, USA Aug. 2013 – Jul. 2018

- Ph.D., Department of Computer Science
- Advisor: Prof. Fei Sha
- GPA: 4.0/4.0
- *Thesis: Transfer Learning for Intelligent Systems in the Wild*

National Taiwan University (NTU), Taipei, Taiwan Sep. 2011 – Jul. 2012

- Ph.D., Graduate Institute of Communication Engineering (transfer)
- Advisor: Prof. Jian-Jiun Ding

National Taiwan University (NTU), Taipei, Taiwan Sep. 2009 – Jun. 2011

- M.S., Graduate Institute of Communication Engineering
- Advisor: Prof. Jian-Jiun Ding
- *Thesis: Integrated Machine Learning Algorithms for Human Age Estimation*

University of Illinois at Urbana-Champaign (UIUC), IL, USA Jan. 2009 – May 2009

- Exchange Student, College of Engineering
- Individual Study Advisor: Prof. Pierre Moulin

National Chiao Tung University (NCTU), Hsinchu, Taiwan Sep. 2005 – Jun. 2009

- B.S., Department of Communication Engineering

WORK EXPERIENCE

Summer Internship, Microsoft Research, Redmond May 2017 – Aug. 2017

- Mentors: Hoifung Poon, Chris Quirk, and Xiaodong He

Military Service, Ministry of National Defense, Taiwan Aug. 2012 – Jul. 2013

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- Second Lieutenant, Chief Counselor of Company

RESEARCH INTERESTS

Machine Learning, Computer Vision, and Artificial Intelligence

CURRENT RESEARCH

Autonomous driving, with Kilian Weinberger and Mark Campbell, Cornell (Aug. 2018 - present):

- Robust autonomous driving

RESEARCH EXPERIENCE

Theoretical and Empirical Data Sciences Laboratory (TEDS Lab), USC (Aug. 2013 – Jul. 2018):

- Transfer learning for visual question answering and vision-language related topics
- Zero-shot learning for large-scale object recognition
- Video summarization with determinantal point processes and recurrent neural networks
- Hamiltonian Markov chain Monte Carlo
- Large-margin determinantal point processes

Digital Image and Signal Processing Laboratory (DISP Lab), NTU (Sep. 2009 – Jul. 2012):

- Facial age estimation and expression recognition based on manifold and metric learning
- Anti-symmetric Fourier descriptors for boundary compression

Other Research Projects in NTU (Sep. 2009 – Jul. 2012):

- Video retargeting based on seam carving (with Prof. Winston Hsu)
- Color constancy and color correction (with Prof. Soo-Chang Pei)

UIUC (Jan. 2009 – May 2009):

- Video fingerprinting (with Prof. Pierre Moulin)

PUBLICATION

Ph.D. Thesis

Wei-Lun Chao, “Transfer learning for intelligent systems in the wild,” USC, Dec. 2018.

M.S. Thesis

Wei-Lun Chao, “Integrated machine learning algorithms for human age estimation,” NTU, Jun. 2011.

Journals

[J3] Wei-Lun Chao, Jian-Jiun Ding, Jun-Zuo Liu, “Facial expression recognition based on improved local binary pattern and class-regularized locality preserving projection,” *Signal Processing*, vol. 117, pp. 1–10, 2015

[J2] Wei-Lun Chao, Jun-Zuo Liu, and Jian-Jiun Ding, “Facial age estimation based on label-sensitive learning and age-oriented regression,” *Pattern Recognition*, vol. 46, no. 3, pp. 628–641, 2013

[J1] Feng-Ju Chang, Soo-Chang Pei, and Wei-Lun Chao, “Color constancy by chromaticity neutralization,” *Journal of the Optical Society of America A*, vol. 29, no. 10, pp. 2217–2225, 2012

Conferences

- [C16] Wei-Lun Chao*, Hexiang Hu*, and Fei Sha, “Cross-dataset adaptation for visual question answering,” to appear in CVPR, 2018
- [C15] Hexiang Hu*, Wei-Lun Chao*, and Fei Sha, “Learning answer embeddings for visual question answering,” to appear in CVPR, 2018
- [C14] Wei-Lun Chao*, Hexiang Hu*, and Fei Sha, “Being negative but constructively: lessons learnt from creating better visual question answering datasets,” to appear in NAACL, 2018 (Oral presentation)
- [C13] Soravit Changpinyo, Wei-Lun Chao, and Fei Sha, “Predicting visual exemplars of unseen classes for zero-shot learning,” ICCV, 2017
- [C12] Wei-Lun Chao*, Soravit Changpinyo*, Boqing Gong, and Fei Sha, “An empirical study and analysis of generalized zero-Shot learning for object recognition in the wild,” ECCV, 2016 (Spotlight)
- [C11] Ke Zhang*, Wei-Lun Chao*, Fei Sha, and Kristen Grauman, “Video summarization with long short-term memory,” ECCV, 2016
- [C10] Soravit Changpinyo*, Wei-Lun Chao*, Boqing Gong, and Fei Sha, “Synthesized classifiers for zero-shot learning,” CVPR, 2016 (Oral presentation)
- [C9] Ke Zhang*, Wei-Lun Chao*, Fei Sha, and Kristen Grauman, “Summary transfer: exemplar-based subset selection for video summarization,” CVPR, 2016
- [C8] Wei-Lun Chao*, Boqing Gong*, Kristen Grauman, and Fei Sha, “Large-margin determinantal point processes,” UAI, 2015
- [C7] Wei-Lun Chao, Justin Solomon, Dominik Michels, and Fei Sha, “Exponential Integration for Hamiltonian Monte Carlo,” ICML, 2015 (Oral presentation)
- [C6] Boqing Gong*, Wei-Lun Chao*, Kristen Grauman, and Fei Sha, “Diverse sequential subset selection for supervised video summarization,” NIPS, 2014
- [C5] Wei-Lun Chao, Jun-Zuo Liu, Jian-Jiun Ding, and Po-Hung Wu, “Facial expression recognition using expression-specific local binary patterns and layer denoising mechanism,” ICICS, 2013
- [C4] Wei-Lun Chao, Jun-Zuo Liu, and Jian-Jiun Ding, “Facial age estimation based on label-sensitive learning and age-specific local regression,” ICASSP, 2012 (Oral presentation)
- [C3] Jian-Jiun Ding, Yu-Hsiang Wang, Lee-Lin Hu, Wei-Lun Chao, and Yio-Wha Shau, “Muscle injury determination by image segmentation,” VCIP, 2011 (Oral presentation)
- [C2] Wei-Lun Chao, Hsiao-Hang Su, Shao-Yi Chien, Winston Hsu, and Jian-Jiun Ding, “Coarse-to-fine temporal optimization for video retargeting based on seam carving,” ICME, 2011 (Oral presentation)
- [C1] Jian-Jiun Ding, Wei-Lun Chao, Jiun-De Huang, and Cheng-Jin Kuo, “Asymmetric Fourier descriptor of non- closed segments,” ICIP, 2010 (Oral presentation)

AWARDS AND HONORS

Ph.D. in University of Southern California (USC)

- CVPR 2018 Doctoral Consortium
- USC Annenberg Graduate Fellowship (Aug. 2013 – Jul. 2017)
- Studying Abroad Scholarship, Ministry of Education, Taiwan

M.S. in National Taiwan University (NTU)

- Avg. Grade: Rank 1 in the Grad. Inst. Communication Engineering, NTU (1/122)
- Honor Student Member of the Phi Tau Phi Scholastic Honor Society of the Republic of China, 2011
- Graduate Student Scholarship, NTU, 2010 – 2011
- Long-Term Scholarship for Talented Students, Hsing Tian Kong Culture and Education Development Foundation, 2010 – 2017

B.S. in National Chiao Tung University (NCTU)

- Avg. Grade: Rank 3 in the Dept. Communication Engineering, NCTU (3/90; 2/43 in the class)
- President's Award, NCTU (3 times)
- Exchange Student Scholarship to UIUC, 2009

Other Scholarships for outstanding academic performance

- From Dung Guang Education Foundation, 2010; Chin-Chih, 2008; Datatronics Technology, Inc., 2007.

PROFESSIONAL EXPERIENCE

Teaching Assistant

- Machine Learning (CSCI 567), USC, Fall 2017 and Spring 2018
- Signals and Systems, NTU, Spring 2011
- Time Frequency Analysis and Wavelet Transforms, NTU, Fall 2010

Invited Talk and Lectures

- Transfer Learning towards Intelligent Systems in the Wild, *at OSU, ASU, TTIC, UofA, Cornell, USC, NVIDIA, and FAIR*, 2018
- Zero-shot Learning for Visual Recognition, *at NTHU, Academia Sinica, USC, and Google*, 2017 – 2018
- What, Where, and How to Share for Computer Vision and Machine Learning, *NCTU*, 2017
- Video Summarization and Hamiltonian Monte Carlo, *in MiRA group, NTU*, 2015
- Dimensionality Reduction and Manifold Learning, *in the Advance Multimedia Analysis and Indexing course instructed by Prof. Winston Hsu, NTU*, 2011 – 2012 (totally 4 weeks)
- Experience and Preparation for Studying Abroad, *in the Career Planning course, NCTU*, 2014 – 2016

Conference Attendance

- Oral Presentation: ICIP 2010, ICME 2011, ICASSP 2012, ICML 2015, CVPR 2017 (workshop)
- Poster Presentation: NIPS 2014, UAI 2015, CVPR 2016, ECCV 2016

Summer school Attendance

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- Deep Learning Summer School 2016, Montreal, Canada (registration fee waived)

REVIEWER EXPERIENCE

- **IEEE Transactions:** on Image Processing, on Multimedia, on Cybernetics, on Information Forensics & Security, and on Circuits and Systems for Video Technology
- **Elsevier:** Pattern Recognition, Expert Systems with Applications
- **Springer:** International Journal of Computer Vision, Machine Vision and Applications
- **Conferences:** WACV 2019, ACCV 2018, NIPS 2018, CVPR 2018, AAAI 2017