

# WEI-LUN (HARRY) CHAO

## CONTACT INFORMATION

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## EDUCATION

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**University of Southern California (USC), CA, USA** Aug. 2013 – Present

- Ph.D., Department of Computer Science
- Advisor: Prof. Fei Sha
- GPA: 4.0/4.0
- Expected Graduation: 2018 Summer (August)

**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

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**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

- Second Lieutenant, Chief Counselor of Company

## RESEARCH INTERESTS

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Machine Learning, Computer Vision, and Artificial Intelligence

## CURRENT RESEARCH

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### **Theoretical and Empirical Data Sciences Laboratory (TEDS Lab), USC (Aug. 2013 - present):**

- 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

## RESEARCH EXPERIENCE

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### **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

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### **M.S. Thesis**

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

### **Preprints and Submissions Under Review**

[P1] Wei-Lun Chao\*, Hexiang Hu\*, and Fei Sha, “Cross-dataset adaptation for visual question answering,” submitted and under review

[P2] Hexiang Hu\*, Wei-Lun Chao\*, and Fei Sha, “Learning answer embeddings for visual question answering,” submitted and under review

[P3] Wei-Lun Chao\*, Hexiang Hu\*, and Fei Sha, “Being negative but constructively: lessons learnt from creating better visual question answering datasets,” arXiv preprint arXiv:1704.07121, 2017

### **Journals**

[J1] 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

[J3] 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

- [C1] Soravit Changpinyo, Wei-Lun Chao, and Fei Sha, “Predicting visual exemplars of unseen classes for zero-shot learning,” ICCV, 2017
- [C2] 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)
- [C3] Ke Zhang\*, Wei-Lun Chao\*, Fei Sha, and Kristen Grauman, “Video summarization with long short-term memory,” ECCV, 2016
- [C4] Soravit Changpinyo\*, Wei-Lun Chao\*, Boqing Gong, and Fei Sha, “Synthesized classifiers for zero-shot learning,” CVPR, 2016 (Oral presentation)
- [C5] Ke Zhang\*, Wei-Lun Chao\*, Fei Sha, and Kristen Grauman, “Summary transfer: exemplar-based subset selection for video summarization,” CVPR, 2016
- [C6] 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)
- [C8] Boqing Gong\*, Wei-Lun Chao\*, Kristen Grauman, and Fei Sha, “Diverse sequential subset selection for supervised video summarization,” NIPS, 2014
- [C9] 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
- [C10] 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)
- [C11] 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)
- [C12] 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)
- [C13] 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

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

- USC Annenberg Graduate Fellowship
- 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

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- 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.

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## **PROFESSIONAL EXPERIENCE**

### **Teaching Assistant**

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

### **Invited Talk and Lectures**

- On Zero-shot Learning for Visual Recognition, at NTHU, Academia Sinica, and USC, 2017
- On What, Where, and How to Share for Computer Vision and Machine Learning, NCTU, 2017
- On Video Summarization and Hamiltonian Monte Carlo, in MiRA group, NTU, 2015
- On Dimensionality Reduction and Manifold Learning, in the Advance Multimedia Analysis and Indexing course instructed by Prof. Winston Hsu, NTU, 2011 – 2012 (totally 4 weeks)
- On 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**

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

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## **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:** CVPR 2018, AAAI, 2017