# Wei-Sheng Lai

*Curriculum Vitae*

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## Education

Ph.D. **University of California, Merced**, CA, USA
- 2015 – 2019, Electrical Engineering and Computer Science
- Advisor: Ming-Hsuan Yang
- Thesis: Learning Spatial and Temporal Visual Enhancement

M.S. **National Taiwan University**, Taipei, Taiwan
- 2012 – 2014, Communication Engineering

B.S. **National Taiwan University**, Taipei, Taiwan
- 2008 – 2012, Electrical Engineering

## Research and Work Experience

Software Engineer **Google**, Mountain View, CA, USA
- Aug. 2019 – Present
- Working on mobile vision and computational photography.

Student Researcher **Google Could AI**, Sunnyvale, CA, USA
- Dec. 2018 – May 2019
- Mentors: Yichang Shih, Chia-Kai Liang, and Ming-Hsuan Yang
- Project: Distortion-Free Wide-Angle Portraits on Camera Phones

Research Intern **Nvidia Research**, Santa Clara, CA, USA
- May 2018 – Nov. 2018
- Mentors: Deqing Sun, Jinwei Gu, and Orazio Gallo
- Project: Learning to Stitch Videos

Research Intern **Nvidia Research**, Santa Clara, CA, USA
- Sep. 2017 – Nov. 2017
- Mentors: Ming-Hsuan Yang and Jan Kautz
- Project: Aliasing-Aware Image Super-Resolution

Research Intern **Adobe Research**, San Jose, CA, USA
- May 2017 - Aug. 2017
- Mentors: Ersin Yumer, Oliver Wang and Eli Shechtman
- Project: Learning Blind Video Temporal Consistency

Research Intern **Microsoft Research**, Redmond, WA, USA
- May 2016 - Aug. 2016
- Mentors: Sing Bing Kang, Neel Joshi and Chris Buehler
- Project: Semantic-Driven Hyperlapse Generation from $\mathbf{360}^\circ$ Videos

Research Assistant **CSIE, National Taiwan University**, Taipei, Taiwan
- Jul. 2014 – Jul. 2015
- Advisor: Yung-Yu Chuang
- Projects: Content-Aware Wide-angle Image Warping, Blind Image Deblurring

Research Assistant **Academia Sinica**, Taipei, Taiwan
- Jul. 2014 – Jun. 2015
- Mentor: Yen-Yu Lin
- Projects: Convolutional Neural Network for Dimensionality Reduction

## Journal Publications (Google Scholar profile)

IJCV 2019 **Blind Image Deblurring vis Deep Discriminative Priors**
Lerenhan Li, Jinshan Pan, Wei-Sheng Lai, Changxin Gao, Nong Sang, and Ming-Hsuan Yang
International Journal of Computer Vision (IJCV), 2019
paper website

TPAMI 2018 **Fast and Accurate Image Super-Resolution with Deep Laplacian Pyramid Networks**
Wei-Sheng Lai, Jia-Bin Huang, Narendra Ahuja, and Ming-Hsuan Yang
IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
paper website

TVCG 2017 **Semantic-driven Generation of Hyperlapse from 360° Video**
Wei-Sheng Lai, Yujia Huang, Neel Joshi, Chris Buehler, Ming-Hsuan Yang and Sing Bing Kang
IEEE Transactions on Visualization and Computer Graphics (TVCG)
paper website

## Conference Publications (Google Scholar profile)

BMVC 2019 **Video Stitching for Linear Camera Arrays**
Wei-Sheng Lai, Deqing Sun, Jinwei Gu, Orazio Gallo, Ming-Hsuan Yang, and Jan Kautz
British Machine Vision Conference (BMVC), 2019
paper website

SIGGRAPH 2019 **Distortion-Free Wide-Angle Portraits on Camera Phones**
YiChang Shih, Wei-Sheng Lai, and Chia-Kai Liang
ACM Transactions on Graphics (Proceedings of SIGGRAPH), 2019
paper website

CVPR 2019 **Depth-Aware Video Frame Interpolation**
Wenbo Bao, Wei-Sheng Lai, Chao Ma, Xiaoyun Zhang, Zhiyong Gao, and Ming-Hsuan Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019
paper website

ECCV 2018 **Learning Blind Video Temporal Consistency**
Wei-Sheng Lai, Jia-Bin Huang, Oliver Wang, Eli Shechtman, Ersin Yumer, and Ming-Hsuan Yang
European Conference on Computer Vision (ECCV), 2018
paper website

BMVC 2018 **Gated Fusion Network for Joint Image Deblurring and Super-Resolution**
**Oral** Xinyi Zhang, Hang Dong, Zhe Hu, Wei-Sheng Lai, Fei Wang, and Ming-Hsuan Yang
British Machine Vision Conference (BMVC), 2018
paper website

CVPR 2018 **Deep Semantic Face Deblurring**
Ziyi Shen, Wei-Sheng Lai, Tingfa Xu, Jan Kautz, and Ming-Hsuan Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
paper website

CVPR 2018 **Learning a Discriminative Prior for Blind Image Deblurring**
Lerenhan Li, Jinshan Pan, Wei-Sheng Lai, Changxin Gao, Nong Sang, and Ming-Hsuan Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018
paper website

NIPS 2017 **Semi-Supervised Learning for Optical Flow with Generative Adversarial Networks**
Wei-Sheng Lai, Jia-Bin Huang, and Ming-Hsuan Yang
Neural Information Processing Systems (NIPS), 2017
paper website

CVPR 2017 **Deep Laplacian Pyramid Networks for Fast and Accurate Super-Resolution**
Wei-Sheng Lai, Jia-Bin Huang, Narendra Ahuja, and Ming-Hsuan Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017
paper website

CVPR 2017 **Learning Fully Convolutional Networks for Iterative Non-blind Deconvolution**
Jiawei Zhang, Jinshan Pan, Wei-Sheng Lai, Rynson Lau, Ming-Hsuan Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2017
paper

CVPR 2016 **A Comparative Study for Single-Image Blind Deblurring**
**Spotlight** Wei-Sheng Lai, Jia-Bin Huang, Zhe Hu, and Ming-Hsuan Yang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016
paper website Talk

CVPR 2015 **Blur Kernel Estimation using Normalized Color-Line Priors**
Wei-Sheng Lai, Jian-Jiun Ding, Yen-Yu Lin, and Yung-Yu Chuang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2015
paper website

## Talks

Invited Talk **Semi-Supervised Learning for Optical Flow with Generative Adversarial Networks**
CSIE, NTU, Taipei, Taiwan, Jan. 2018.

Invited Talk **Fast and Accurate Image Super-Resolution with Laplacian Pyramid Networks**
Advanced Computer Vision Workshop, Academia Sinica, Taipei, Taiwan, Dec. 2017.

Guest Lecture **Deep Laplacian Pyramid Networks for Fast and Accurate Super-Resolution**
EECS282, UC Merced, USA, Aug. 2017.

Guest Lecture **Introduction to Single-Image Super Resolution**
EECS286, UC Merced, USA, Oct. 2016.

Spotlight **A Comparative Study for Single-Image Blind Deblurring**
CVPR, Las Vegas, USA, Jun. 2016.

## Professional Activities

Organizer
- $2^{\text{nd}}$ $360^{\circ}$ Perception and Interaction (**360PI**) Workshop, ICCV 2019 webpage
- $1^{\text{st}}$ $360^{\circ}$ Perception and Interaction (**360PI**) Workshop, ECCV 2018 webpage

Conference Reviewer
- IEEE International Conference on Computer Vision (**ICCV**), 2017, 2019
- IEEE Conference on Computer Vision and Pattern Recognition (**CVPR**), 2017, 2018, 2019
- European Conference on Computer Vision (**ECCV**), 2016, 2018
- Asian Conference on Computer Vision (**ACCV**), 2016, 2018
- Neural Information Processing Systems (**NIPS**), 2016
- Pacific Graphics (**PG**), 2016

Journal Reviewer
- International Journal of Computer Vision (**IJCV**)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**)
- IEEE Transactions on Multimedia (**TMM**)
- IEEE Transaction on Image Processing (**TIP**)
- IEEE Transactions on Circuits and Systems for Video Technology (**TCVST**)
- IEEE Transactions on Geoscience and Remote Sensing (**TGRS**)
- Transactions on Computational Imaging (**TCI**)
- Computer Vision and Image Understanding (**CVIU**)
- Signal, Image and Video Processing (**SIVP**)
- Digital Signal Processing (**DSP**)
- The Visual Computer (**TVCJ**)
- Neurocomputing
- Journal of Electronic Imaging

## Honors and Awards

Award — **Doctoral Consortium Travel Award**, CVPR 2019

Finalist — **Facebook PhD Fellowship**, Facebook Inc, Jan. 2018

Honorable Mention — **Snap Research Fellowship**, Snap Inc, Dec. 2017

Scholarship — **Class A Scholarship**, National Taiwan University, Sep. 2013
Top 10% of students in one academic year

Award — **Presidential Award**, National Taiwan University, Jan. 2009, Jun. 2009
Top 5% of students in one semester

## Teaching Experience

Teaching Assistant — **EECS, University of California**, Merced, CA, USA
- CSE 140: Computer Architecture (Spring 2018)
- CSE 165: Object Oriented Programming [C++ Programming] (Spring 2017)
- CSE 030: Data Structure [C++ Programming] (Fall 2016)
- CSE 185: Introduction to Computer Vision [MATLAB programming] (Spring 2016)
- CSE 020: Introduction to Computing [Java Programming] (Fall 2015)

Teaching Assistant — **EE/CSIE, National Taiwan University**, Taipei, Taiwan
- CSIE 7694: Digital Visual Effects (Spring 2015)
- CSIE 5098: Digital Image Synthesis (Fall 2014)
- EE 5163: Advanced Digital Signal Processing (Spring 2014)
- CommE 5030: Time-Frequency Analysis and Wavelet Transform (Fall 2013)

## Technical Skills

Programming — C/C++, Python

Toolbox / Software — MATLAB, OpenCV, MatConvNet, Caffe, PyTorch

## References

Ph.D. Advisor — **Ming-Hsuan Yang**, *Professor*, University of California, Merced
✉ mhyang@ucmerced.edu homepage

Research Mentor — **Jia-Bin Huang**, *Assistant Professor*, Virginia Tech, Virginia
✉ jbhuang@vt.edu homepage

Research Mentor — **Deqing Sun**, *Senior Research Scientist*, Nvidia
✉ deqings@nvidia.com homepage

Research Mentor — **Jinwei Gu**, *Senior Research Scientist*, Nvidia
✉ jinweig@nvidia.com homepage

Research Mentor — **Sing Bing Kang**, *Principal Researcher*, Microsoft Research, Redmond
✉ sbkang@microsoft.com homepage

Research Mentor — **Yung-Yu Chuang**, *Professor*, National Taiwan University, Taiwan
✉ cyy@csie.ntu.edu.tw homepage

Research Mentor — **Yen-Yu Lin**, *Associate Research Fellow*, Academia Sinica, Taiwan
✉ yylin@citi.sincia.edu.tww homepage