

Ming-Yu Liu

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Professional Experiences

- **NVIDIA Research** **Santa Clara, CA, USA**
Senior Research Scientist *2016 – now*
 - Conducted research on generative modeling, image synthesis, image-to-image translation, style transfer, and domain adaptation.
 - **Mitsubishi Electric Research Laboratories (MERL)** **Cambridge, MA, USA**
Principal Research Scientist *2012 – 2016*
 - Conducted research on generative modeling, object pose estimation, object detection, semantic segmentation, image processing, and active learning for factory automation and autonomous driving.
 - Product launched: MELFA-3D vision system
 - **Intel** **Taipei, Taiwan**
Software Engineering Intern *2005 – 2006*
 - **Army** **Taiwan**
Paratrooper Platoon Leader, Military Rank: Second Lieutenant *2003 – 2005*
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Education

- **University of Maryland College Park, Maryland** **College Park, MD, USA**
Electrical and Computer Engineering, Ph.D. *2006 – 2012*
 - **National Chiao Tung University** **Hsinchu, Taiwan**
Electrical Engineering, B.A. *1999 – 2003*
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Patents

- US 9,989,964: System and Method for Controlling Vehicle Using Neural Network
 - US 9,971,958: Method and System for Generating Multimodal Digital Images
 - US 9,811,756: Method for Labeling Images of Street Scenes
 - US 9,805,294: Method for Denoising Time-of-Flight Range Images
 - US 9,704,257: System and method for semantic segmentation using Gaussian random field network
 - US 9,633,274: Method and system for denoising images using deep Gaussian conditional random field network
 - US 9,558,268: Method for semantically labeling an image of a scene using recursive context propagation
 - US 9,280,827: Method for determining object poses using Weighted Features
 - US 9,195,904: Method for detecting objects in stereo images
 - US 8,983,177: Method for increasing resolutions of depth images
 - US 8,908,913: Voting-based pose estimation for 3D sensors
 - US 8,428,363: Method for segmenting images using superpixels and entropy rate clustering
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Services

- **Reviewer:** NIPS, ICML, ICLR, CVPR, ICCV, ECCV, IEEE TPAMI, IEEE TIP, IEEE SPL, CVIU, NSF proposal
 - **Area Chair:** WACV'17, BMVC'18
 - **Guest Editor:** CVIU Special Issue on Adversarial Learning in Computer Vision
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Tutorial and Workshop

- Organized CVPR'18 Workshop on AI City Challenge
 - Organized CVPR'17 Tutorial on Theory and Applications of Generative Adversarial Networks
 - Organized ACCV'16 Tutorial on Deep Learning for Vision Guided Language Generation and Image Generation
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Invited Talks

- High-Resolution Image Synthesis and Semantic Manipulation with Conditional GANs, CVPR'18 Workshop on New Trends in Image Restoration and Enhancement workshop and challenges on super-resolution, dehazing, and spectral reconstruction
 - Multimodal Unsupervised Image-to-Image Translation, CVPR'18 Tutorial on GANs
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Awards

- 1st place, Domain Adaptation for Semantic Segmentation Competition, WAD Challenge, CVPR'18
 - 1st place, Optical Flow Competition, Robust Vision Challenge, CVPR'18
 - Outstanding Reviewer, CVPR'18
 - Pioneer Research Award, NVIDIA'17 and '18
 - Nvidia Technology Conference, Best Presenter Award, NVIDIA '17
 - CR&D Award, Mitsubishi Electric Research Labs (MERL) '16
 - Best paper final list by Robotics: Science and System Conference RSS'15
 - R&D 100 Award by R&D magazine, '14
 - University of Maryland College Park, Fellowship, '11
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Opensource Projects

- UNIT, <https://github.com/mingyuliutw/UNIT>
 - MUNIT, <https://github.com/NVlabs/MUNIT>
 - pix2pixHD, <https://github.com/NVIDIA/pix2pixHD>
 - FastPhotoStyle <https://github.com/NVIDIA/FastPhotoStyle>
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Publications

- **Video-to-Video Synthesis**
Ting-Chun Wang, Ming-Yu Liu, Jun-Yan Zhu, Guilin Liu, Andrew Tao, Jan Kautz, Bryan Catanzaro
NIPS'18
- **Context-aware Synthesis and Placement of Object Instances**
Donghoon Lee, Sifei Liu, Jinwei Gu, Ming-Yu Liu, Ming-Hsuan Yang, Jan Kautz
NIPS'18
- **Multimodal Unsupervised Image-to-Image Translation**
Xun Huang, Ming-Yu Liu, Serge Belongie, Jan Kautz
ECCV'18
- **A Closed-form Solution to Photorealistic Image Stylization**
Yijun Li, Ming-Yu Liu, Xueting Li, Ming-Hsuan Yang, Jan Kautz
ECCV'18
- **Superpixel Sampling Networks**
Varun Jampani, Deqing Sun, Ming-Yu Liu, Ming-Hsuan Yang, Jan Kautz
ECCV'18

- **High-Resolution Image Synthesis and Semantic Manipulation with Conditional GANs**
Ting-Chun Wang, Ming-Yu Liu, Jun-Yan Zhu, Andrew Tao, Jan Kautz, Bryan Catanzaro
CVPR'18
- **PWC-Net: CNNs for Optical Flow Using Pyramid, Warping, and Cost Volume**
Deqing Sun, Xiaodong Yang, Ming-Yu Liu, Jan Kautz
CVPR'18
- **Learning Superpixels with Segmentation-Aware Affinity Loss**
Wei-Chih Tu, Ming-Yu Liu, Varun Jampani, Deqing Sun, Shao-Yi Chien, Ming-Hsuan Yang, Jan Kautz
CVPR'18
- **MoCoGAN: Decomposing Motion and Content for Video Generation**
Sergey Tulyakov, Ming-Yu Liu, Xiaodong Yang, Jan Kautz
CVPR'18
- **The 2018 NVIDIA AI City Challenge**
Milind Naphade, Ming-Ching Chang, Anuj Sharma, David C. Anastasiu, Vamsi Jagarlamudi, Pranamesh Chakraborty, Tingting Huang, Shuo Wang, Ming-Yu Liu, Rama Chellappa, Jenq-Neng Hwang, and Siwei Lyu
CVPR'18 Workshop
- **Reblur2Deblur: Deblurring Videos via Self-Supervised Learning**
Huaijin Chen, Jinwei Gu, Orazio Gallo, Ming-Yu Liu, Ashok Veeraraghavan, Jan Kautz
ICCP'18
- **Learning Binary Residual Representations for Domain-specific Video Streaming**
Yi-Hsuan Tsai, Ming-Yu Liu, Deqing Sun, Ming-Hsuan Yang, Jan Kautz
AAAI'18
- **Localization-Aware Active Learning for Object Detection**
Chieh-Chi Kao, Teng-Yok Lee, Pradeep Sen, Ming-Yu Liu
arXiv preprint arXiv:1801.05124
- **Unsupervised Image-to-Image Translation Networks**
Ming-Yu Liu, Thomas Breuel, and Jan Kautz
NIPS 2017
- **Deep 360 Pilot: Learning a Deep Agent for Piloting through 360 Sports Videos**
Hou-Ning Hu*, Yen-Chen Lin*, Ming-Yu Liu, Hsien-Tzu Cheng, Stanley Chang, Min Sun
CVPR 2017
- **CASENet: Deep Category-Aware Semantic Edge Detection**
Zhiding Yu, Chen Feng, Ming-Yu Liu, Srikumar Ramalingam
CVPR 2017
- **Tactics of Adversarial Attack on Deep Reinforcement Learning Agents**
Yen-Chen Lin, Zhang-Wei Hong, Yuan-Hong Liao, Meng-Li Shih, Ming-Yu Liu, Min Sun
IJCAI 2017
- **Attentional Network for Visual Object Detection**
Kota Hara, Ming-Yu Liu, Oncel Tuzel, and Amir-massoud Farahmand
arXiv preprint arXiv:1702.01478
- **Deep Active Learning for Civil Infrastructure Defect Detection and Classification**
Chen Feng, Ming-Yu Liu, Chieh-Chi Kao, and Teng-Yok Lee
International Workshop on Computing in Civil Engineering (IWCCE), 2017
- **Coupled Generative Adversarial Networks**
Ming-Yu Liu, Oncel Tuzel
NIPS 2016
- **R-CNN for Small Object Detection**
Chenyi Chen, Ming-Yu Liu, Oncel Tuzel, Jianxiong Xiao
ACCV 2016
- **Gaussian Conditional Random Field Network for Semantic Segmentation**
Raviteja Vemulapalli, Oncel Tuzel, Ming-Yu Liu, Rama Chellappa
CVPR 2016
- **Deep Gaussian Conditional Random Field Network: A Model-based Deep Network for Denoising**
Raviteja Vemulapalli, Oncel Tuzel, Ming-Yu Liu
CVPR 2016

- **Learning to Remove Multipath Distortions in Time-of-Flight Range Images for a Robotic Arm Setup**
 Kilho Son, Ming-Yu Liu, Yuichi Taguchi
 ICRA 2016
 - **Unsupervised Network Pretraining via Encoding Human Design**
 Ming-Yu Liu, Arun Mallya, Oncel Tuzel, Xi Chen
 WACV 2016
 - **Layered Interpretation of Street View Images**
 Ming-Yu Liu, Shuoxin Lin, Srikumar Ramalingam, Oncel Tuzel
 RSS 2015
 - **Recursive Context Propagation Network for Semantic Scene Labeling**
 Abhishek Sharma, Oncel Tuzel, Ming-Yu Liu
 NIPS 2014
 - **Learning to Rankd 3D Features**
 Oncel Tuzel, Ming-Yu Liu, Yuichi Taguchi, Arvind Raghunathan
 ECCV 2014
 - **Joint Geodesic Upsampling of Depth Images**
 Ming-Yu Liu, Oncel Tuzel, Yuichi Taguchi
 CVPR 2013
 - **Cluster Analysis via Maximizing a Submodular Function subject to a Matroid Constraint**
 Ming-Yu Liu, Oncel Tuzel, Srikumar Ramalingam, Rama Chellappa
 TPAMI 2014
 - **Model-Based Vehicle Pose Estimation and Tracking in Videos Using Random Forests**
 Michael Hödlmoser, Branislav Micusik, Marc Pollefeys, Ming-Yu Liu, Martin Kampel
 3DV 2013
 - **Fast Object Detection and Pose Estimation in Heavy Clutter for Robotic Bin-Picking**
 Ming-Yu Liu, Oncel Tuzel, Ashok Veeraraghavan, Yuichi Taguchi, Tim K. Marks, Rama Chellappa
 IJRR 2012
 - **Voting-Based Pose Estimation for Robotic Assembly Using a 3D Sensor**
 Changhyun Choi, Yuichi Taguchi, Oncel Tuzel, Ming-Yu Liu, Srikumar Ramalingam
 ICRA 2012
 - **A Grassmann Manifold-based Domain Adaptation Approach**
 Jingjing Zheng, Ming-Yu Liu, Rama Chellappa, P Jonathan Phillips
 ICPR 2012
 - **Classification and Pose Estimation of Vehicles in Videos by 3D Modeling**
 Michael Hödlmoser, Branislav Micusik, Ming-Yu Liu, Marc Pollefeys, Martin Kampel
 3DV 2012
 - **Entropy Rate Superpixel Segmentation**
 Ming-Yu Liu, Oncel Tuzel, Srikumar Ramalingam, Rama Chellappa
 CVPR 2011
 - **Fast Directional Chamfer Matching**
 Ming-Yu Liu, Oncel Tuzel, Ashok Veeraraghavan, Rama Chellappa
 CVPR 2010
 - **Pose Estimation in Heavy Clutter using a Multi-Flash Camera**
 Ming-Yu Liu, Oncel Tuzel, Ashok Veeraraghavan, Rama Chellappa, Amit Agrawal, Haruhisa Okuda
 ICRA 2010
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