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*

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*

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

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

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

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

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
- Nvida Technology Conference, Best Presenter Award, NVIDIA '17
- CR&D Award, Mitsubishi Electric Research Labs (MERL) '16
- Best paper final listby Robotics: Science and System Conference RSS'15
- R&D 100 Award by R&D magazine, '14
- University of Maryland College Park, Fellowship, '11

Opensource Project

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

Publications

- **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 Hodlmoser, 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
