

# YEN-CHENG LIU

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## RESEARCH INTERESTS

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Machine Learning, Computer Vision, and Cross-Modality Machine Perception

## EDUCATION

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**National Taiwan University**, Taipei, Taiwan *Sep. 2015 - June 2017*  
*M.S. in Electrical Engineering*

- Co-Advisor: Prof. Yu-Chiang Frank Wang and Prof. Sheng-De Wang
- GPA: **4.19**/4.30 (Overall), **4.19**/4.30 (Major)

**Technical University of Munich**, Munich, Germany *Sep. 2014 - Mar. 2015*  
*Exchange student in Electrical Engineering and Information Technology*

**National Chiao Tung University**, Hsinchu, Taiwan *Sep. 2011 - June 2015*  
*B.S. in Electrical and Computer Engineering*

- GPA: **4.24**/4.30 (Overall), **4.29**/4.30 (Major)

## PUBLICATIONS

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- [1] **Y.-C. Liu**, Y.-Y. Yeh, T.-C. Fu, S.-D. Wang, W.-C. Chiu, Y.-C. Frank Wang. “Detach and Adapt: Learning Cross-Domain Disentangled Deep Representation”, *IEEE Conference on Computer Vision and Pattern Recognition*, 2018 (**CVPR’18 Spotlight**)
- [2] Y.-Y. Yeh, **Y.-C. Liu**, W.-C. Chiu, Y.-C. Frank Wang. “Anonymous”, *European Conference on Computer Vision*, 2018 (**ECCV’18**; under review)
- [3] P.-Y. Chen, **Y.-C. Liu**, Y.-Y. Yeh, Y.-C. Frank Wang. “Single-Image Depth Estimation with Semantics consistency”, *IEEE Conference on Image Processing (ICIP’18)*; under review)
- [4] **Y.-C. Liu**, W.-C. Chiu, S.-D. Wang, Y.-C. Frank Wang. “Domain-Adaptive Generative Adversarial Networks for Sketch-to-Photo Inversion”, *IEEE International Workshop on Machine Learning for Signal Processing*, 2017 (MLSP’17)
- [5] A.-S. Liu, T.-W. Hsu, P.-H. Hsiao, **Y.-C. Liu**, L.-C. Fu. “The Manhunt Network: People Tracking in Hybrid-Overlapping Under the Vertical Top-view Depth Camera Networks”, *IEEE Conference on Advanced Robotics and Intelligent Systems*, 2016
- [6] **Y.-C. Liu**, P.-H. Ciou, C.-S. Fuh. “2D+3D Morphing Model”, *IPPR Conference on Computer Vision, Graphics, and Image Processing*, 2016

## RESEARCH EXPERIENCES

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**Research Assistant**, National Taiwan University *July 2017 - Present*  
*Advisor: Prof. Yu-Chiang Frank Wang*

- **Learning Joint Multi-Attribute Disentangled Representation Across Domains** [1]
  - Learned disentangled and interpretable representation from multi-attribute images
  - Transferred multi-attribute information across distinct data domains
- **Semantic Depth Estimation** [3]
  - Integrated unsupervised depth estimation with semantic segmentation
  - Proposed segment-based stereo consistency to improve depth estimation

- **Few Frames Guided Video Synthesis and Completion** [2]
  - Extracted time-order representation from limited anchor frames
  - Achieved video prediction and interpolation based on LSTM sequence-sequence model

**Graduate Research**, CITI, Academia Sinica

*May 2016 - June 2017*

*Advisor: Prof. Yu-Chiang Frank Wang and Prof. Sheng-De Wang*

- **Learning Cross-Domain Disentangled Representation** [1]
  - First work to address cross-domain representation disentanglement
  - Excelled the state-of-the-art in task of unsupervised domain adaptation
  - Achieved unsupervised image translation conditioned on given attribute
- **Domain-Adaptive GAN for Sketch Inversion** [4]
  - Proposed cross-style sketch-to-photo inversion based on generative models
  - Adapted the sketch-to-photo inversion to unsupervised sketch style

## TEACHING EXPERIENCES

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**Teaching Assistant**, National Taiwan University

*Sep. 2015 - Feb. 2016*

*Data Structure and Programming, instructed by Chung-Yang (Ric) Huang*

- Provided one-to-one assistance for 150+ students and graded the programming assignments

## SELECTED PROJECTS

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**Jenga Builder**, *Robotics*

*Sep. 2015 - Feb. 2016*

- Automatic reconstruction of Jenga tower using 6-DOF robotics arm and RGB-cam

**Bio-baseball**, *Bio-Medical Engineering Lab*

*Sep. 2014 - Feb. 2015*

- Created sports simulator controlled by eye movement and forearm muscles

**AI-Bomber-Man**, *Intro. to Computer and Programming*

*Feb. 2012 - June 2012*

- Applied Flood-Fill algorithm to create multiple AI enemies of Bomberman game

**Hiticket.tk**, *Intelligent Devices and Cloud Computing*

*Sep. 2015 - Feb. 2016*

- Built up real-time system for secondhand ticket information exchange

## SELECTED COURSES

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**Computer Science (straight A<sup>+</sup>)**

- Advanced Computer Vision, Computer Graphics, Robotics, Advanced Digital Signal Processing, Data Structure, Computer Organization, Operating System

**Mathematics (straight A<sup>+</sup>)**

- Statistics, Probability, Non-linear System Analysis, Calculus, Differential Equ., Linear Algebra

## HONORS & AWARDS

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**GAN MOST Competition First Prize**

*2017*

**Dean's List Award (4 times)**

*2011-2015*

**Pan Wen Yuan Foundation Scholarship**

*2013*

**Rotary International Graduate Student Scholarship**

*2016*

**Exchange Student Scholarship**

*2014*

## SKILLS

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**Toolbox/Software**

TensorFlow, PyTorch, Theano, Torch, Caffe, Chainer, Unity

**Programming Languages**

LaTeX, Python, Java, C/C++, MATLAB, Lua