Tzu-Ming Harry **Hsu**

Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology

(+1) 617-803-7785 | stmharry@mit.edu | stmharry.github.io | stmharry

Education

Massachusetts Institute of Technology (MIT) — *Cambridge, MA*
PH.D. STUDENT IN COMPUTER SCIENCE — *Sep. 2017 - Now*

National Taiwan University (NTU) — *Taipei, Taiwan*
B.S.E. IN ELECTRICAL ENGINEERING AND B.S. IN PHYSICS — *Sep. 2011 - Jun. 2016*

GPA Overall (3.99 / 4.00), Last 60 units (3.99 / 4.00)
Overall rank 1 / 190

Skills

Programming Python + TensorFlow, Docker, C / C++, MATLAB, Java, HTML / CSS / JS
Languages Mandarin Chinese (Native), Taiwanese (Native), English (Fluent), Spanish (Intermediate)

Publications

CONFERENCE PAPER

[1] **3D-Aware Scene Manipulation via Inverse Graphics. Tzu-Ming Harry Hsu***, Shunyu Yao*, Jun-Yan Zhu, Jiajun Wu, Antonio Torralba, William T. Freeman, Joshua B. Tenenbaum, to be presented at *NIPS* 2018

[2] **Transfer Neural Trees for Heterogeneous Domain Adaptation.** Wei-Yu Chen, **Tzu-Ming Harry Hsu**, Yao-Hung Hubert Tsai, and Yu-Chiang Frank Wang, in *ECCV* 2016.

[3] **Unsupervised Domain Adaptation With Imbalanced Cross-Domain Data. Tzu-Ming Harry Hsu**, Wei-Yu Chen, Cheng-An Hou, Yao-Hung Hubert Tsai, Yi-Ren Yeh, and Yu-Chiang Frank Wang, in *ICCV* 2015.

[4] **Connecting the dots without clues: Unsupervised domain adaptation for cross-domain visual classification.** Wei-Yu Chen, **Tzu-Ming Harry Hsu**, Cheng-An Hou, Yi-Ren Yeh and Yu-Chiang Frank Wang, in *ICIP* 2015.

[5] **Robust Motion Artifact Reduction of Photoplethysmographic Signal with Trajectory Space Circular Model. Tzu-Ming Harry Hsu**, Wei-Yu Chen, Kuan-Lin Chen, Mong-Chi Ko, You-Cheng Liu, An-Yeu Andy Wu, in *ICASSP Signal Processing Cup* 2015.

Honors & Awards

GROUP

2015 **Silver Medal Award**, Altera Innovate Asia FPGA Design Competition — *Wu Han, China*
- Ranked 2nd among 20 teams with self-designed PCB integration

2015 **10th Place**, ICASSP Signal Processing Cup
- Ranked 10th globally in sports heartbeat detection with an error of 4.89 beats per minute (BPM)

INDIVIDUAL

2011 - 14 **Presidential Award (5 times)**, Department of Electrical Engineering, NTU
- Awarded per semester to the top 5% students

2011 **World's 1st Place and Gold Medal Award**, International Physics Olympiad (IPhO) — *Bangkok, Thailand*
- Ranked 1st in both theory section and experiment section among 500 national representatives from over 80 countries

2008 **Gold Medal Award**, International Junior Science Olympiad (IJSO) — *South Korea*

Research Experiences

Clinical Descision Making Group
PH.D. STUDENT OF PROF. PETER SZOLOVITS

CSAIL, MIT
Jul. 2018 - Now

- **Unsupervised Machine Learning for Healthcare**
  - Align clinical imaging data and radiology reports with representation learning.

Computer Vision Group

CSAIL MIT
Feb. 2018 - Now

- **3D Inverse-Graphics**
  - Develop vision as inverse-graphics for 3D scene understanding.

Signal Kinetics Lab
RESEARCH ASSISTANT OF DR. FADEL ADIB

Media Lab, MIT
Sep. 2017 - Jan. 2018

- **Agent Co-localization via Cellular Network**
  - Construct Bayesian model based on LTE channel estimation and locate agents in an area simultaneously.

Multimedia and Machine Learning Lab
INTERN STUDENT UNDER THE INSTRUCTION OF DR. YU-CHIANG FRANK WANG

CITI, Academia Sinica, Taiwan
Apr. 2014 - Jun. 2016

- **Deep Learning for Feature Transformation**
  - Build specific neural networks on target tasks to properly transform images to feature vectors, allowing recognition, neighbor querying, and possibly other tasks to be done.
- **Deep Learning for Heterogeneous Domain Adaptation**
  - Transfer knowledge across different feature domains and build classifiers above the transferred knowledges
  - An algorithm is proposed to transfer classifiers to a different dimensional space with deep neural network
- **Unsupervised Domain Adaptation with Imbalanced Cross-domain Data**
  - Information of labeled source-domain data is transferred to the unlabeled target-domain, which may be with imbalanced labels
  - An algorithm is proposed to combine sub-domain level classifiers to identify better source data applicability
- **Unsupervised Domain Adaptation with Balanced Cross-domain Data**
  - A set of labeled source-domain data is used to construct classifier for the unlabeled target-domain data
  - An algorithm is proposed to address source-target mismatch and project them to a common space
- **External Review**
  - Review papers as external reviewer for *ICCV*, *ECCV*, *AAAI*, and *IJCAI*

Access IC Lab
INTERN STUDENT UNDER THE INSTRUCTION OF DR. AN-YEU ANDY WU

National Taiwan University
Sep. 2014 - Jun. 2015

- **Noise Removal of Photoplethysmographic (PPG) Signals**
  - Remove noises in PPG signals induced by motions by decorrelating the PPG with accelerometer signal
  - An algorithm is proposed to project the signal into a complex plane, in which a temporal filter will be performed, followed by ensemble voting for the optimal beat counts

Laboratory for Applied Logic and Computation in System Design (ALCom Lab)
INTERN STUDENT UNDER THE INSTRUCTION OF DR. JIE-HONG ROLAND JIANG

National Taiwan University
Jul. 2013 - Jun. 2014

- **Compressed Sensing**
  - Compress the data perceived by a sensor array using less data storage than what it used to consume
- **Mathematical Neural models**
  - Establish a time-continuous model of human neurons to simulate the biological effects at stimulus and message passing

Work & Teaching Experiences

Digital Drift Corporation
BACKEND ENGINEER

Taipei, Taiwan
Mar. 2016 - Aug. 2017

- **Deep Neural Networks for Image Interpretation**
  - Build deep models for cuisine images using TensorFlow on multi-GPU machines, providing a backend with an API