T.M. Harry **Hsu**

Tzu-Ming Harry Hsu, Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology

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Highlights

1. **1.5** years in deep learning service deployment for Bite! APP with 40k users and 400k user images
2. **2** majors acquired in undergraduate education: Electrical Engineering and Physics
3. Ranked **#1** in International Physics Olympiad 2011 in both theory and experiment among 400+ participants

Research Interests

1. Deep Learning
2. Computer Vision
3. Machine Learning

Skills

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

Education

Massachusetts Institute of Technology (MIT) *Cambridge, MA, USA*
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 ranking	1 / 190
Relevant courses	**Deep and Structured Machine Learning**, **Digital Visual Effects**, Design and Analysis of Algorithms, Data Structure and Programming, Probability and Statistics, Linear Algebra

Publications

Conference Paper

[1] **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.

[2] **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.

[3] **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.

[4] **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)	

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

Signal Kinetics Lab *Media Lab, MIT, US*
RESEARCH ASSISTANT OF DR. FADEL ADIB *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 *CITI, Academia Sinica, Taiwan*
INTERN STUDENT UNDER THE INSTRUCTION OF DR. YU-CHIANG FRANK WANG *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 *National Taiwan University*
INTERN STUDENT UNDER THE INSTRUCTION OF DR. AN-YEU ANDY WU *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) *National Taiwan University*
INTERN STUDENT UNDER THE INSTRUCTION OF DR. JIE-HONG ROLAND JIANG *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 *Taipei, Taiwan*
Backend Engineer *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

Olympiad Tutoring Community *Taipei, Taiwan*
Private Tutor *Sep. 2011 - Jun. 2015*

- Offer tutoring for high school physics, competition physics, GRE subject test (physics), and SAT II subject test (physics)
- Two students became national representatives for Taiwan in International Physics Olympiad (IPhO)