TZU-MING HARRY HSU

Ph.D. Student, Computer Science and Artificial Intelligence Laboratory, MIT

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EDUCATION

Ph.D. Student in Electrical Engineering and Computer Science
Massachusetts Institute of Technology
Sep 2017 – Ongoing | Cambridge, MA

S.M. in Electrical Engineering and Computer Science
Massachusetts Institute of Technology
Sep 2017 – May 2020 | Cambridge, MA

B.S.E. in Electrical Engineering
National Taiwan University
Sep 2011 – Jun 2016 | Taipei, Taiwan

Class Rank: 1/190 | GPA: 3.99/4.00

B.S. in Physics
National Taiwan University
Sep 2012 – Jun 2016 | Taipei, Taiwan

PUBLICATIONS

Journals

- **Three–Dimensional Neural Network to Automatically Assess Liver Tumor Burden Change on Consecutive Liver MRIs**
  Journal of the American College of Radiology
  Alexander Goehler, Tzu–Ming Harry Hsu, Ronilda Lacson, Isha Gujrathi, Raein Hashemi, Grzegorz Chlebus, Peter Szolovits, and Ramin Khorasani.
- **Transfer Neural Trees: Semi–Supervised Heterogeneous Domain Adaptation and Beyond** IEEE Transactions on Image Processing (TIP)
  Wei–Yu Chen, Tzu–Ming Harry Hsu, Yao–Hung Hubert Tsai, Ming–Syan Chen, and Yu–Chiang Frank Wang.

Conference Proceedings

- **Federated Visual Classification with Real–World Data Distribution** ECCV 2020
  Tzu–Ming Harry Hsu, Hang Qi, Matthew Brown.
- **CheXpert++: Approximating the CheXpert labeler for Speed, Differentiability, and Probabilistic Output** MLHC 2020
  Matthew B. A. McDermott, Tzu Ming Harry Hsu, Wei–Hung Weng, Marzyeh Ghassemi, Peter Szolovits.
- **Baselines for Chest X–Ray Report Generation** ML4H Workshop, NeurIPS 2019
  William Boag, Tzu–Ming Harry Hsu, Matthew McDermott, Gabriela Berner, Emily Alesentzer, Peter Szolovits.
- **Measuring the Effects of Non–Identical Data Distribution for Federated Visual Classification** FL Workshop, NeurIPS 2019
  Tzu–Ming Harry Hsu, Hang Qi, Matthew Brown.

HIGHLIGHT

Ranked #1 in IPhO 2011
International Physics Olympiad 2011 with 400+ participants

STRENGTHS

Computer Vision | Federated Learning | ML for Healthcare | Machine Learning | Signal Processing

LEADERSHIP

MIT Taiwanese Student Association
President
May 2018 – April 2019

NTU Toastmasters Club
Public Relations/Member Vice President
Mar 2014 – Feb 2015

WORK EXPERIENCE

Beth Israel Deaconess Medical Center
Research Intern
Nov 2019 – Ongoing

Digital Drift Corporation, Taiwan
Lead Data Scientist
Mar 2016 – Ongoing

Brigham and Women's Hospital
Research Trainee
Sep 2019 – March 2020

Google
Research Intern / Student Researcher
Jun 2019 – March 2020; Jun 2020 – Sep 2020

Ministry of National Defense, Taiwan
Military Service
Jul 2016 – Jun 2017

PUBLICATIONS (CONT'D)

- **Clinically Accurate Chest X-Ray Report Generation** MLHC 2019
  Tzu-Ming Harry Hsu*, Guanxiong Liu*, Matthew McDermott, Willie Boag, Wei-Hung Weng, Peter Szolovits, Marzyeh Ghassemi.
- **3D-Aware Scene Manipulation via Inverse Graphics** NeurIPS 2018
  Tzu-Ming Harry Hsu*, Shunyu Yao*, Jun-Yan Zhu, Jiajun Wu, Antonio Torralba, William T. Freeman, and Joshua B. Tenenbaum.
- **Unsupervised Multimodal Representation Learning across Medical Images and Reports** ML4H, NeurIPS 2018
  Tzu-Ming Harry Hsu, Wei-Hung Weng, Willie Boag, Matthew McDermott, and Peter Szolovits .
- **Learning Food Quality and Safety using Wireless Stickers** Hotnets 2018
  Unsoo Ha, Yunfei Ma, Zexuan Zhong, Tzu-Ming Harry Hsu, and Fadel Adib.
- **Transfer Neural Trees for Heterogeneous Domain Adaptation** ECCV 2016
  Wei-Yu Chen, Tzu-Ming Harry Hsu, Yao-Hung Hubert Tsai, and Yu-Chiang Frank Wang.
- **Unsupervised Domain Adaptation With Imbalanced Cross-Domain Data** ICCV 2015
  Tzu-Ming Harry Hsu, Wei-Yu Chen, Cheng-An Hou, Yao-Hung Hubert Tsai, Yi-Ren Yeh, and Yu-Chiang Frank Wang.
- **Connecting the Dots Without Clues: Unsupervised Domain Adaptation for Cross-domain Visual Classification** ICIP 2015
  Wei-Yu Chen, Tzu-Ming Harry Hsu, Cheng-An Hou, Yi-Ren Yeh and Yu-Chiang Frank Wang.

RESEARCH EXPERIENCE

MIT Clinical Decision Making Group (MEDG)

Prof. Peter Szolovits

Jul 2018 – Ongoing MIT CSAIL

- Beyond full supervision for uncovering underlying structure of medical radiology data and clinician reports
- 3D medical imaging including MRI and CT
- Medical report generation from radiographs

Google AI

Dr. Matthew Brown

Jun 2019 – Mar 2020 Google

- Investigate the effect of non-identical data in training federated learning visual classifiers

MIT Computer Vision Group

Feb 2018 – June 2018 MIT CSAIL

- Use 3D-aware vision as inverse-graphics for image editing

MIT Signal Kinetics Lab

Prof. Fadel Adib

Sep 2017 – Jan 2018 MIT Media Lab

- Mobile localization in LTE cellular network
- Food quality and content detection with wireless signal

AWARDS

Altera Innovate Asia FPGA Design Competition

Silver Medal

2015

- Designed a custom PCB for music modulation and user sporting statistics

ICASSP Signal Processing Cup

Tenth Place

2015

- Ranked 10th globally in heartbeat detection for sports

International Physics Olympiad (IPhO)

First Place Overall, in Theory, and in Experiment

2011

- Ranked 1st in both theory section and experiment section among 401 international representatives from over 80 countries

International Junior Science Olympiad (IJSO)

Gold Medal

2008

- Ranked top 10% among 300 international representatives from over 60 countries

RESEARCH EXPERIENCE (CONT'D)

Multimedia and Machine Learning Lab

Prof. Yu–Chiang Wang

Apr 2014 – Jun 2016 | Academia Sinica, Taiwan

- Unsupervised domain adaptation with imbalanced cross–domain data
- Deep learning for heterogeneous domain adaptation

Access IC Lab

Prof. An–Yeu Andy Wu

Sep 2014 – Jun 2015 | NTU, Taiwan

- Noise removal of photoplethysmographic signals

Laboratory for Applied Logic and Computation in System Design (ALCom Lab)

Prof. Jie–Hong Roland Jiang

Jul 2013 – Jun 2014 | NTU, Taiwan

- Continuous–time mathematical models for neurons