

T.M. Harry Hsu

Tzu-Ming Harry Hsu, Dept. of Electrical Engineering and Dept. of Physics, National Taiwan University, Taipei, Taiwan

☎ (+886) 928-82-0924 | ✉ b00901168@ntu.edu.tw | 🏠 stmharry.github.io | 📱 stmharry

Research Interests

- 1 Computer Vision
- 2 Deep Learning
- 3 Pattern Recognition
- 4 Machine Learning

Skills

Programming MATLAB, Python (TensorFlow), Caffe, C / C++, Java, HTML / CSS / JS, Verilog
Languages Mandarin Chinese (Native), Taiwanese (Native), English (Fluent), Spanish (Intermediate)
GRE Verbal (153 / 170), Quantitative (170 / 170), Analytical Writing (4.0 / 6.0)

Education

National Taiwan University (NTU)

B.S.E. IN ELECTRICAL ENGINEERING AND B.S. IN PHYSICS

Taipei, Taiwan

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 (**bold** denotes graduate level)

Publications

CONFERENCE PAPER

- [1] Wei-Yu Chen, **Tzu-Ming Harry Hsu**, Yao-Hung Hubert Tsai, and Yu-Chiang Frank Wang, "Transfer Neural Trees for Heterogeneous Domain Adaptation", in ECCV 2016. [PDF Link]
- [2] **Tzu-Ming Harry Hsu**, Wei-Yu Chen, Cheng-An Hou, Yao-Hung Hubert Tsai, Yi-Ren Yeh, and Yu-Chiang Frank Wang, "Unsupervised Domain Adaptation With Imbalanced Cross-Domain Data", in ICCV 2015. [PDF Link]
- [3] Wei-Yu Chen, **Tzu-Ming Harry Hsu**, Cheng-An Hou, Yi-Ren Yeh and Yu-Chiang Frank Wang, "Connecting the dots without clues: Unsupervised domain adaptation for cross-domain visual classification", in ICIP 2015. [PDF Link]
- [4] **Tzu-Ming Harry Hsu**, Wei-Yu Chen, Kuan-Lin Chen, Mong-Chi Ko, You-Cheng Liu, An-Yeu Andy Wu, "Robust Motion Artifact Reduction of Photoplethysmographic Signal with Trajectory Space Circular Model", in ICASSP Signal Processing Cup 2015. [PDF Link]

Honors & Awards

GROUP

- 2015 **Silver Medal Award**, Altera Innovate Asia FPGA Design Competition [Poster Link] Wu Han, China
- Ranked 2nd among 20 teams with self-designed PCB integration
- 2015 **10th Place**, ICASSP Signal Processing Cup [PDF Link]
- 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 [Winner List]
- 2008 **Gold Medal Award**, International Junior Science Olympiad (IJSO) Gyeong-Nam, South Korea

Research Experiences

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 [1] 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 a small set with imbalanced label counts
 - An algorithm [2] 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 [3] is proposed to address source-target mismatch and project them to a common space
- **External Review**
 - Review papers as external reviewer for *IEEE ICCV*, *IEEE ECCV*, *IEEE AAAI*, and *IEEE 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 - Now

- **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

PRIVATE TUTOR

Taipei, Taiwan

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 the national representatives for Taiwan for International Physics Olympiad (IPhO)

Selected Past Projects

Automatic Control	A robust inverted pendulum-balancing bot that navigate along a track	[YouTube Link]
Communication System	A gesture-detecting system using Doppler effect on WiFi signal	[YouTube Link]
Embedded System	EzBud , a music manipulation platform that synchronizes with user heart rate during sporting	
Speech Processing	A complete system producing sentences from raw recordings using deep learning	