Hsin-Yuan Huang (Robert)

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EDUCATION

Ph.D., California Institute of Technology Oct. 2018 - Now

Working on "Machine Designed Quantum Error Correction Code" in John Preskill's group.
Participating in "Quantum Machine Learning for High Energy Physics" led by Maria Spiropulu (Caltech), Seth Lloyd (MIT) and Daniel Lidar (USC).

B.S., National Taiwan University Sep. 2014 - Jun. 2018

Studied Computer Science and Physics. GPA: 4.30/4.30, Rank: 1/120.
Member of the Machine Learning and Data Mining Group; Advisor: Chih-Jen Lin

Jian-Guo High School Sep. 2011 - Jun. 2014

Attended courses at National Taiwan University during senior year:
Randomized Algorithm (graduate course), Data Structure and Algorithm, ODE, Linear Algebra, Calculus, General Physics. (GPA: 4.30/4.30)

RESEARCH EXPERIENCE

Research Intern, Allen Institute of Artificial Intelligence, Mentor: Wen-tau Yih Jun. 2018 - Sep. 2018

Research Intern, Microsoft Research, Redmond, USA, Mentor: Chenguang Zhu Jun. 2017 - Sep. 2017

Research Assistant, Dept. of Computer Science, NTU, PI: Chih-Jen Lin Sep. 2014 - Jun. 2018

Research Assistant, Dept. of Life Science, NTU, PI: Hsueh-Fen Juan May 2013 - Aug. 2014

Research Assistant, Institute of Earth Science, Academia Sinica, PI: Fong Chao Mar. 2012 - Mar. 2013

PUBLICATIONS

[1] **H.-Y. Huang**, E. Choi, W. Yih. FlowQA: Grasping Flow in History for Conversational Machine Comprehension. Submitted to *7th International Conference on Learning Representations (ICLR-19)*, 2019.

[2] **H.-Y. Huang**, C. Zhu, Y. Shen, W. Chen. FusionNet: Fusing via Fully-aware Attention with Application to Machine Comprehension. In *6th International Conference on Learning Representations (ICLR-18)*, 2018. (top 3% in review score)

[3] H.-F. Yu, **H.-Y. Huang**, I. S. Dhillon, C.-J. Lin. A Unified Algorithm for One-class Structured Matrix Factorization with Side Information. In *31st AAAI Conference on Artificial Intelligence (AAAI-17)*, 2017. (acceptance rate: 24.6%)

[4] **H.-Y. Huang**, C.-J. Lin. Linear and Kernel Classification: When to Use Which? In *SIAM International Conference on Data Mining (SDM-16)*, 2016. (acceptance rate: 25.8%)

[5] C.-Y. Chen, A. Ho, **H.-Y. Huang**, H.-F. Juan and H.-C. Huang. Dissecting the human protein-protein interaction network via phylogenetic decomposition. In *Scientific Reports*, 4, 7153 (2014).

SELECTED AWARDS AND HONORS

Awards for Competition in Algorithm and Informatics:

25th International Olympiad in Informatics, Bronze Medal *Jul. 2013*
2013 Asia-Pacific Informatics Olympiad, Silver Medal *May 2013*
National High School Informatics Competition, First Place *Dec. 2012*

Awards for Academic Excellence:

First Place Scholarship, Ministry of Education (awarded to Olympiad medalists ranking top 1)
2015, 2016, 2017, 2018

Presidential Award, National Taiwan University (awarded to students ranking top 5%)
Fall / Spring 2015, 2016, 2017, 2018

SELECTED PROJECTS

For more detailed descriptions, please refer to my personal website: https://momohuang.github.io.

Machine Reading Comprehension & Fully-aware Attention Jun. 2017 – Sep. 2017
Research Intern at Microsoft AI+Research, Redmond, USA

- Teach machines to read and understand an arbitrary passage then answer any question on the passage.
- Propose an enhancement of attention (fully-aware attention) and an improved neural architecture, FusionNet.
- Achieve a new state-of-the-art on the competitive Stanford Question Answering Dataset (SQuAD).
- Performs significantly better (+5%) on adversarial datasets for machine comprehension.

Implicit-Feedback Recommender System with Side Information May 2016 – Apr. 2017
Research Assistant to Professor Chih-Jen Lin, National Taiwan University

- The first to develop efficient method to solve implicit-feedback recommender system with any convex loss and with a wide range of side information.
- Showed that using classification loss can yield significant improvement in prediction accuracy.

Automatic Machine Learning: Linear and Kernel Classification Jan. 2015 – Feb. 2017
Research Assistant to Professor Chih-Jen Lin, National Taiwan University

- Developed an automatic scheme to decide which method is more suitable for a new problem.
- Empirically showed the effectiveness and efficiency of the proposed method.

Human Protein-Protein Interaction Network May 2013 – Aug. 2014
Research Assistant to Professor Hsueh-Fen Juan, National Taiwan University

- Data analysis on human protein-protein interaction network to reveal hidden properties.
- Simulate the evolution of human protein network using our proposed perturbation avoidance model.

ORAL AND POSTER PRESENTATIONS

[1] "Understanding Machine Reading Comprehension", Invited Talk, Academia Sinica, Oct 16, 2017.

[2] "A Unified Algorithm for One-class Structured Matrix Factorization with Side Information", 31st AAAI Conference on Artificial Intelligence (AAAI-17), Feb. 4-9, 2017.

[3] "Linear and Kernel Classification: When to Use Which?", SIAM International Conference on Data Mining (SDM16), May 5-8, 2016.

[4] "Linear and Kernel Classifier: When to Use Which?", Spotlight presentation (acceptance rate: 11%), Machine Learning Summer School (MLSS'15), Kyoto University, August 23-September 4, 2015.

[5] "Brief Introduction to Automatic Machine Learning", Science Exploration Forum, National Taiwan University, August 11, 2015.

[6] "Dissecting Human Protein-Protein Interaction Network via Phylogenetic Decomposition." 14th International Conference on Systems Biology (ICSB2013), August 30-September 3, 2013.

SYNERGISTIC ACTIVITY

Organizing a stand for LIBSVM at Future Tech Exhibition, Taipei World Trade Center (2017).

Teaching Assistant: Introduction to the Theory of Computation (2017).

Conference volunteer: AAAI Conference on Artificial Intelligence (2017).

Conference review: Asia Pacific Bioinformatics Conference (2017).

Journal review: Data Mining and Knowledge Discovery (2016).

OTHER AWARDS AND HONORS

The Phi Tau Phi Scholastic Honor Society of the Republic of China *Jun. 2018*
Undergraduate Research Project Exhibition, First Place *Jun. 2017*
Appier Scholarship *Apr. 2016, Feb. 2017*
AAAI Conference on Artificial Intelligence 2017 Scholarship *Feb. 2017*
Shih-Liang Chien Memorial Award *May. 2016*
SIAM International Conference on Data Mining 2016 Travel Award *Apr. 2016*
Machine Learning Summer School 2015 Travel Award *Oct. 2015*
Wang Da Gang Natural Science Scholarship *May 2013*
Taiwan International Science Fair, Third Prize *Nov. 2012*
Science Research Grant for High School Student, First Prize *Nov. 2012*
Taipei High School Informatics Competition, First Place *Oct. 2012*
Taipei High School Informatics Competition, Third Place *Oct. 2011*

REFERENCES

Chih-Jen Lin:
Distinguished Professor, Department of Computer Science, National Taiwan University.
Email: cjlin@csie.ntu.edu.tw.

Chenguang Zhu:
Researcher, Microsoft AI+Research, Redmond, USA.
Email: chezhu@microsoft.com.

Yung-Yu Chuang:
Professor, Chairman, Department of Computer Science, National Taiwan University.
Email: cyy@csie.ntu.edu.tw.

Wen-tau Yih:
Principal Research Scientist, Allen Institute for Artificial Intelligence (AI2).
Email: scottyih@allenai.org.