Hsin-Yuan Robert Huang

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EDUCATION

Dept. of Computer Science, National Taiwan University Sep. 2014 - present

Dept. of Physics, National Taiwan University Sep. 2014 - present

Double major in computer science and physics, minor in mathematics.
Current GPA: 4.30/4.30, Rank: 1/120.
Member of the Machine Learning and Data Mining Group; Advisor: Professor Chih-Jen Lin

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

Special permission to attend courses in 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)

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*
Taipei High School Informatics Competition, First Place *Oct. 2012*
Taipei High School Informatics Competition, Third Place *Oct. 2011*

Awards for Academia Excellence:

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

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

RESEARCH EXPERIENCE

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

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

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

PUBLICATIONS

[1] **H.-Y. Huang**, C. Zhu, Y. Shen, W. Chen. FusionNet: Fusing via Fully-aware Attention with Application to Machine Comprehension. Submitted to *6th International Conference on Learning Representations (ICLR-18)*, 2018.

[2] 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%)

[3] **H.-Y. Huang**, C.-J. Lin. Linear and Kernel Classification: When to Use Which? In *SIAM International Conference on Data Mining (SDM16)*, 2016. (acceptance rate: 25.8%)

[4] 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).

SKILLS

- Languages: Mandarin Chinese, English, Japanese
- Programming: C/C++, Python, MATLAB, Mathematica

SELECTED PROJECTS

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

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

- For machines to read and understand an arbitrary passage, then answers any question on the passage.
- Propose an enhancement for 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 developed efficient method to solve implicit-feedback recommender system with any convex loss and with a wide range of side informations.
- Showed that using classification loss can yield significant improvement in prediction.

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.

Image Stitching Mar. 2016 – Jun. 2016
Course project when taking Digital Image Processing.

- Image feature detection and matching using MSOP, KD-tree and RANSAC algorithm.
- Implemented greedy graph cut and Poisson blending for seamless panorama.
- Won the first place when taking the course with $\sim$130 competitors.

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

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

NTU CS Department Poster Competition, First Place — *Jun. 2017*
Appier Scholarship — *Apr. 2016, Feb. 2017*
AAAI Conference on Artificial Intelligence 2017 Scholarship — *Feb. 2017*
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*