

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 ~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

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

<i>Undergraduate Research Project Exhibition, First Place</i>	<i>Jun. 2017</i>
<i>Appier Scholarship</i>	<i>Apr. 2016, Feb. 2017</i>
<i>AAAI Conference on Artificial Intelligence 2017 Scholarship</i>	<i>Feb. 2017</i>
<i>Shih-Liang Chien Memorial Award</i>	<i>May. 2016</i>
<i>SIAM International Conference on Data Mining 2016 Travel Award</i>	<i>Apr. 2016</i>
<i>Machine Learning Summer School 2015 Travel Award</i>	<i>Oct. 2015</i>
<i>Wang Da Gang Natural Science Scholarship</i>	<i>May 2013</i>
<i>Taiwan International Science Fair, Third Prize</i>	<i>Nov. 2012</i>
<i>Science Research Grant for High School Student, First Prize</i>	<i>Nov. 2012</i>

REFERENCES

Chih-Jen Lin:

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

Chenguang Zhu:

Researcher, Microsoft AI+R, Redmond, USA.
Email: chezhu@microsoft.com.

Yung-Yu Chuang:

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

Scott Wen-Tau Yih:

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