

# Hsin-Yuan Huang (Robert)

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& Department of Physics

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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 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)*

## 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 Academic 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

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

## PUBLICATIONS

- [1] **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)
- [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).

## 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

- 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.

### 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 a 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

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.