

# Yueh-Hua Wu

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## EDUCATION

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**National Taiwan University (NTU), Taipei, Taiwan**

*Sept. 2017 - PRESENT*

*Master of Science in Computer Science and Information Engineering*

**National Taiwan University (NTU), Taipei, Taiwan**

*Sept. 2013 - Jun. 2017*

*Bachelor of Science in Electrical Engineering*

- Cumulative GPA: 3.85/4.00
- Related courses:
  - Mathematics: Linear Algebra, Differential Equation, Discrete Mathematics, Stochastic Process, Probability and Statistics
  - Computer Science: Convex Optimization and Machine Learning, Artificial Intelligence, Artificial Neural Network, Genetic Algorithm, Algorithm Design and Analysis, Data Structure and Programming, Operating Systems

## RESEARCH INTERESTS

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Reinforcement Learning, Machine Ethics, and Social Network.

## PUBLICATIONS

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- **Yueh-Hua Wu**, Nontawat Charoenphakdee, Han Bao, Voot Tangkaratt, and Masashi Sugiyama, "Imitation Learning from Imperfect Demonstration", *In Proceedings of the 36th International Conference on Machine Learning (ICML)*, 2019
- Fan-Yun Sun, Yen-Yu Chang, **Yueh-Hua Wu**, and Shou-De Lin, "A Regulation Enforcement Solution for Multi-agent Reinforcement Learning", *In Proceedings of the 18th International Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2019
- **Yueh-Hua Wu**, Fan-Yun Sun, Yen-Yu Chang, and Shou-De Lin, "ANS: Adaptive Network Scaling for Deep Rectifier Reinforcement Learning Models", *Preprint arXiv:1809.02112*, 2018
- Yen-Yu Chang, Fan-Yun Sun, **Yueh-Hua Wu**, and Shou-De Lin, "A Memory-Network Based Solution for Multivariate Time-Series Forecasting", *Preprint arXiv:1809.02105*, 2018
- **Yueh-Hua Wu** and Shou-De Lin, "A Low-Cost Ethics Shaping Approach for Designing Reinforcement Learning Agents", *In Proceedings of the 32nd AAAI Conference on Artificial Intelligence (AAAI)*, Feb. 2018 (**Oral**)
- Fan-Yun Sun, Yen-Yu Chang, **Yueh-Hua Wu**, and Shou-De Lin, "Designing Non-greedy Reinforcement Learning Agents with Diminishing Reward Shaping", *In Proceedings of the 1st AAAI/ACM conference on Artificial Intelligence, Ethics, and Society (AIES)*, Feb. 2018 (**Oral**)
- Shu-Kai Chang, Sui-Tsung Go, **Yueh-Hua Wu**, Yen-Ting Lee, Chien-Lin Lai, Sz-Han Yu, Chun-Wei Chen, Huan-Yuan Chen, Ming-Feng Tsai, Mi-Yen Yeh, and Shou-De Lin, "An Ensemble of Ranking Strategies for Static Rank Prediction in a Large Heterogeneous Graph", *2016 WSDM Cup (Winner Report)*
- Chin-Chi Hsu, Kuan-Hou Chan, Ming-Han Feng, **Yueh-Hua Wu**, Huan-Yuan Chen, Sz-Han Yu, Chun-Wei Chen, Ming-Feng Tsai, Mi-Yen Yeh, and Shou-De Lin, "Time-Aware Weighted PageRank for Paper Ranking in Academic Graphs", *2016 WSDM Cup (Winner Report)*

## AWARDS & HONORS

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- Winner, Microsoft WSDM Cup 2016
- Ph.D. Student Scholarship, Ministry of Education, Taiwan *Sep. 2017 - Jan. 2019*
- Outstanding Students Scholarship, Tainan City United Workers Association *Sep. 2013*

## RESEARCH EXPERIENCES

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### NTU - Machine Discovery and Social Network Mining Lab

Feb. 2015 - PRESENT

Undergrad. (before Jul. 2017) / Ph.D. (after Jul. 2017) Research Assistant

Advisor: Shou-De Lin, Department of Computer Science and Information Engineering

#### Research Project: **Robust Reinforcement Learning**

- Developed general reinforcement learning frameworks to make the learning process faster and to make the performance more robust with respect to hyper-parameters.
- Incorporated reinforcement learning with hyper-parameter optimization (e.g., bayesian optimization) and adaptive tuning approaches so that reinforcement learning models perform consistently well without much human efforts.

#### Research Project: **Ethical Decision Making**

- Proposed a high-level framework to train an ethical RL agent based on a regular reward function together with certain human data optimizing diverse objectives.
- Designed the ethics shaping model to adjust the reward function through the interaction between the RL and human policy.
- Coined three scenarios *Grab a Milk*, *Driving and Avoiding*, and *Driving and Rescuing* to show how ethics shaping balances ethical behavior and performance pursuit.

#### Research Project: **Community Detection**

- Proposed a multi-view community detection approach with multiple node similarity matrices.
- Trained the model unsupervisedly with triple matrix factorization while preserving a matrix shared with all views.
- Visually and mathematically analyzed state-of-the-art community detection algorithms with real-world networks.

### NTU - Department of Electrical Engineering

Sep. 2013 - Oct. 2017

Research Assistant

Advisor: Prof. Jian-Jiun Ding, Department of Electrical Engineering

#### Research Project: **Singular Value Decomposition for Fast Compressive Sensing**

- Proposed a signal-dependent framework to select suitable atoms with upper error bound for  $l_1$ -norm minimization.
- Deployed singular value decomposition to approximate the atom dictionary used for compressive sensing.

### Ministry of Science and Technology

Apr. 2015 - Apr. 2016

Research Assistant

Advisor: Prof. Tseng-Nan Lin, Department of Electrical Engineering

#### Research Project: **Face Recognition on Frequency Domain**

- Cooperated with outstanding researchers to conduct hands-on experiments on face recognition.
- Surveyed face recognition approaches and conducted experiments to compare their performances.

## WORK EXPERIENCES

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### RIKEN Center for Advanced Intelligence Project

July. 2018 - Jan. 2019

Researcher Intern

Advisor: Masashi Sugiyama

#### Research Project: **Learning from Imperfect Demonstrations**

### RIKEN Center for Advanced Intelligence Project

July. 2018 - Jan. 2019

Researcher Intern

Advisor: Masashi Sugiyama

#### Research Project: **Learning from Imperfect Demonstrations**

**Groundhog Technologies Inc.**  
*Data Scientist Intern*

*Apr. 2016 - Dec. 2017*

*Research Project: **Real-Time Bidding Machine***

- Transformed images and keywords of advertisements to informative features with Word2vec and semi-supervised dimensionality reduction.
- Designed an ensemble model that took input from Neural Net models and factorization machines.

## **SELECTED COURSEWORKS AND PROJECTS**

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**Genetic Algorithm for Cluster Ensemble**

*Fall 2016*

*Final Project of Genetic Algorithm*

- Utilized Genetic Algorithm to solve non-convex optimization in cluster ensemble.
- Achieved better accuracy than convex approaches with efficient optimization in non-convex domains.

**Mental Disease Classification with Neural Nets**

*Fall 2015*

*Final Project of Psychoinformatics and Neuroinformatics*

- Crawled mental disease labels and features from PTT forum.
- Predicted delusional disorder symptom with TF-IDF and Neural Net and achieved 0.83 accuracy.

**Wireless Oscilloscope with Arduino and Bluetooth module**

*Fall 2015*

*Final Project of Electronic Circuits Experiments (III)*

- Designed a wireless device to replace cumbersome wires between circuits and oscilloscopes.

## **RELATED SKILLS**

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- Standardized Test

– TOEFL score: 103/120 (R:28/30, L:27/30, S:24/30, W:24/30)

*Apr. 2019*

- Programming: Python, Matlab, C++,  $\text{\LaTeX}$