

# Curriculum Vitae

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## RESEARCH INTERESTS

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- Reinforcement learning (RL)
  - Multi-agent settings
  - Exploration
  - Interactive RL
- Machine learning
  - Training efficiency improvement/optimization
- Computer vision
  - Visual scene understanding (Graph Neural Network, Scene Parsing ...)
  - Vision-based robotics

## EDUCATION

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### 2013.9 - 2017.6 **B.S. in Computer Science**

*Dept. of Computer Science, National Tsing Hua University, Hsinchu, Taiwan*

- Rank: 3<sup>rd</sup>/120 (top 2.5%)
- GPA: 4.16/4.30 (overall), 4.25/4.30 (major)

## EXPERIENCES

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### 2017.1 - present **Full-time Research Assistant**

*Dept. of Computer Science, National Tsing Hua University, Taiwan*

- Reinforcement learning
- Multi-agent settings
- Vision-based robotics

*Advisor: Prof. Chun-Yi Lee*



### 2016.9 - 2017.1 **Teaching Assistant** - Hardware Laboratory., Fall 2016

*Dept. of Computer Science, National Tsing Hua University, Hsinchu, Taiwan*

*Advisor: Prof. Chun-Yi Lee*

### 2016.7 - 2016.12 **Research Assistant**

*Dept. of Computer Science, National Tsing Hua University, Hsinchu, Taiwan*

#### **Project: Real-Time Object Detection on Embedded System**

- Computer vision
- Object detection
- Deep learning

*Advisor: Prof. Shang-Hong Lai*

2016.7 - 2016.9    **Research Assistant**

*Academia Sinica, Research Center for Information Technology Information, Taipei, Taiwan*

**Project: Automatic Conversion of Pop Music into Chiptunes for 8-bit Pixel Art**

- Machine learning
- Music information retrieval

*Advisor: Prof. Yi-Hsuan Yang, Prof. Li Su*



2015.7 - 2015.9    **Summer Internship** - Quality Assurance Team

*Broadcom Corporation, Hsinchu, Taiwan*

- Network product testing
- Performance tuning



## RESEARCH PAPERS

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- **S.-Y. Su\***, Z.-W. Hong\*, Y.-S. Chang\*, T.-Y. Shann\*, and C.-Y. Lee\*, “A deep policy inference Q-network for multi-agent systems,” in *Intl. Conf. Autonomous Agents and Multiagent Systems (AAMAS), 2018* [[pdf](#)]
- **S.-Y. Su**, C.-K. Chiu, L. Su, and Y.-H. Yang, “Automatic conversion of pop music into chiptunes for 8-bit pixel art,” in *Intl. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, pp. 411-415. Mar. 2017 [[ieee](#)][[pdf](#)][[project](#)]
- Z.-W. Hong, T.-Y. Shann, **S.-Y. Su**, Y.-H. Chang, C.-Y. Lee, “Diversity-Driven Exploration Strategy for Deep Reinforcement Learning,” **submitted to** *Intl. Conf. Learning Representations (ICLR) Workshop, 2018* [[pdf](#)]
- Z.-W. Hong, Y.-M. Chen, **S.-Y. Su**, T.-Y. Shann, Y.-H. Chang, H.-K. Yang, B. Ho, C.-C. Tu, Y.-C. Chang, T.-C. Hsiao, H.-W. Hsiao, S.-P. Lai, C.-Y. Lee, “Virtual-to-real: Learning to control in visual semantic segmentation,” **submitted to** *Intl. Jt. Conf. Artificial Intelligence (IJCAI), 2018* [[video](#)]

\* *indicates equal contribution*

## AWARDS

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- **ZyXEL Outstanding Student Scholarship**  
*Awarded to outstanding student in college of Electrical Engineering and Computer Science*
- **Excellent Graduation Project Award**  
*Awarded to top 5 graduation projects in Dept. of Computer Science*
- **Academic Achievement Awards (5 times) (2013-2017)**  
*Awarded to top 5% students in Dept. of Computer Science*
- **Best Project Award**  
*In course Introduction to Multimedia*
- **Best Poster Presentation Award**  
*In course Social Computing Application Design*

## RELATED COURSEWORK

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- Large-Scale Machine Learning
- Design and Analysis of Algorithms
- Music Information Retrieval
- Probability
- Data Structure
- Introduction to Multimedia
- Software Engineering
- Linear Algebra

## TECHNICAL SKILLS

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*Programming Language:* Python, C/C++, Objective-C, Java, MATLAB

*Deep Learning Framework/Library:* Keras, Tensorflow, Pytorch

## SELECTED PROJECTS

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### 1. A deep policy inference Q-network for multi-agent systems [[github](#)]

S.-Y. Su, Z.-W. Hong, Y.-S. Chang, T.-Y. Shann, and C.-Y. Lee

*Tackling non-stationarity problem in multi-agent RL environment through inferring opponents' / collaborators' policies.*

### 2. Pop-to-8bit [[github](#)]

S.-Y. Su, C.-K. Chiu, L. Su, and Y.-H. Yang

*A pipeline that combine both machine learning and signal processing techniques to convert pop musics into chiptune songs.*

### 3. Keras Image Captioning Model [[github](#)]

S. Y. Su, Y. R. Lin, S. D. Yang, *NTHU CS565500 final project, CIDErD score: 0.765, Rank 1<sup>st</sup> in course.*

### 4. Bridge-Building [[github](#)]

S.Y. Su, *simple environment for training Reinforcement Learning agent.*

## REFERENCES

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### Professor Chun-Yi Lee

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