Curriculum Vitae

Shih-Yang Su

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Research Interests

- Computer vision
  - Embodied Vision Learning
  - Visual Reconstruction
  - Visual Scene Understanding
- Reinforcement learning (RL)
  - Multi-agent settings
  - Curiosity-Driven Learning

Education

2018.8 - **Ph.D. in Electrical and Computer Engineering**
Dept. of Electrical and Computer Engineering, Virginia Tech, Blacksburg, VA
- Machine Perception
- Visual Reconstruction
- Embodied Vision Learning

Advisor: Prof. Jia-Bin Huang

2013.9 - 2017.6 **B.S. in Computer Science**
Dept. of Computer Science, National Tsing Hua University, Hsinchu, Taiwan
- Rank: 3rd/120 (top 2.5%)
- GPA: 4.16/4.30 (overall), 4.25/4.30 (major)

Experiences

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

- 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," in *Intl. Jt. Conf. Artificial Intelligence (**IJCAI**), 2018* [video][pdf]
- **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]
- Z.-W. Hong, T.-Y. Shann, **S.-Y. Su**, Y.-H. Chang, C.-Y. Lee, "Diversity-driven exploration strategy for deep reinforcement learning," in *Intl. Conf. Learning Representations (**ICLR**) Workshop, 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]

**** indicates equal contribution***

Awards

- **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

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

Technical Skills

Programming Language: Python, C/C++, Objective-C, Java, MATLAB
Deep Learning Framework/Library: Keras, Tensorflow, Pytorch

Selected Projects

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 1st in course*.

4. **Bridge-Building** [github]
   S.Y. Su, *simple environment for training Reinforcement Learning agent.*