

HSUAN-KUNG YANG

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Education

National Tsing Hua University (NTHU)

B.S. IN COMPUTER SCIENCE

Hsinchu, Taiwan

Sep. 2014 - Jun. 2018

- Cumulative GPA: 3.98 / 4.30, Cumulative ranking: 15/162
 - GPA in last semester: 4.26/4.30, ranking: 3/136

National Tsing Hua University (NTHU)

M.S. IN COMPUTER SCIENCE

Hsinchu, Taiwan

Sep. 2018 - Jun. 2020 (Expected)

Research Interests

- Real-time semantic segmentation
- Optical flow estimation
- Deep learning for robotics, with an emphasis on vision reinforcement learning tasks

Publication

- Y.-S Xu, **H.-K Yang**, T.-J Fu, and C.-Y Lee, “Dynamic Video Segmentation Network”, Accept by Computer Vision and Pattern Recognition (CVPR), Jun. 2018
- Z.-W Hong, **H.-K Yang**, Y.-M Chen, S.-Y Su, T.-Y Shann, and C.-Y Lee, “Virtual-to-Real: Learning to Control in Visual Semantic Segmentation”, Accept to International Joint Conference on Artificial Intelligence Joint (IJCAI), Jul. 2018
- **H.-K Yang**, A.-C Cheng, K.-W Ho and C.-Y Lee, “Visual Relationship Prediction via Label Clustering and Incorporation of Depth Information”, Accept by European Conference on Computer Vision (ECCV) workshop, Sep. 2018
- **H.-K Yang**, P.-H Chiang, K.-W Ho, M.-F Hong, and C.-Y Lee, “Never Forget: Balancing Exploration and Exploitation via Learning Optical Flow”, under review.
- **H.-K Yang**, T.-J Fu, K.-W Ho, P.-H Chiang and C.-Y Lee, “Embedding Cluster for Accelerating Semantic Video Segmentation”, under review.
- **H.-K Yang**, P.-H Chiang, M.-F Hong, and C.-Y Lee, “Exploration via Flow-Based Intrinsic Rewards”, under review.

Projects

Virtual-to-Real Autonomous Robotic Control

In this project, we trained our A3C agent in virtual environment, and the agents can be transfer to real world without fine-tuning and any other effort by using image segmentation as our meta state to bridge the gap

*** This project has won first place out of 114 teams in NVIDIA Jetson Challenge in GTC 2018.**

Semantic Segmentation with Deep Learning

Implement several state-of-art semantic segmentation network based on Tensorflow framework, including ICNet, PSPNet, Deeplab, and FCN. These model trained on the Cityscapes and ADE20k dataset.

*** These models are open-source on Github (gained 200+ stars).**

Transforming Graffiti to Realistic Sketches using GANs

The goal of this project is to convert car graffiti pictures into a more complicated, realistic drawing. We used CycleGAN as our baseline. What we have achieved in this project is having aids from additional image encoded with input, to assist the model find the mapping more easily to the desired output.

Reinforcement Learning

I implemented Deep Q-network (DQN), Double DQN, and A3C algorithms for the flappy bird game on Pygame environment. Also, I practiced to implement the basic Q-Learning algorithm for the Cartpole environment on openAI Gym.

Work Experience

Research Assistant in Elsa Lab

NATIONAL TSING HUA UNIVERSITY

Taipei, Taiwan

Sep. 2017 - Present

- Research area including image segmentation, optical flow estimation, and reinforcement learning tasks with an emphasis on perception module.
- Worked on several research projects which have been published in CVPR'18, IJCAI'18, and ECCV'18

Teaching Assistant in Deep Learning Workshop at NVIDIA

NVIDIA DEEP LEARNING INSTITUTE

Taipei, Taiwan

Jul. 2017 - Aug. 2017

- Responsible for guiding students to finish labs.
- Workshop contents including the tutorials of CUDA parallel programming, object detection, and image segmentation.

Summer Intern at CyberLink Corp.

POWER DIRECTOR TEAM - RESEARCH AND DEVELOPMENT ENGINEER

Taipei, Taiwan

Jul. 2016 - Aug. 2016

- Responsible for implementing new image/video effects and solving critical issues in Power Director released versions.
- Improved algorithms to be released in future versions.
- Used OpenCL and Intel Instruction set to improve efficiency.

Honors & Awards

2017	Scholarship for EECS Excellent Students (for Top 5%)	<i>NTHU, Taiwan</i>
2017	Dean's List Award (for the Top 3 in class)	<i>NTHU, Taiwan</i>
2017	Computer Science Senior Project Contest - 1st place (1/59)	<i>NTHU, Taiwan</i>
2018	The Cutting Edge of Deep Learning Contest - 3rd place (3/20)	<i>NTHU, Taiwan</i>
2018	College of Electrical Engineering and Computer Science Contest - 1st place (1/10)	<i>NTHU, Taiwan</i>
2018	NVIDIA Jetson Developer Challenge Contest in GTC2018 - 1st place (1/114)	<i>San Jose, US</i>
2018	1st People In Context (PIC) Challenge in ECCV2018 - 2nd place (2/4)	<i>Munich, Germany</i>

Professional Skills

Programming	Python, C/C++, Matlab
Parallel Computing	MPI, CUDA
Operating System	Windows, Linux
Deep Learning	Tensorflow, Caffe, Pytorch
Language	Chinese (native), English (Fluent)