CHENG-YOU LU

Mob: +886 981258938 | a2694815@gmail.com
Address: No. 506, Sec. 2, Datong Rd., South Dist., Tainan City 702, Taiwan (R.O.C.)

EDUCATION

National Chiao Tung University Hsinchu, Taiwan
B.S. in Computer Science Sept 2015 — June 2019

- Cumulative GPA Overall: 3.96/4.3 ; Junior and Senior GPA: 4.03/4.3

Shanghai Jiao Tong University Shanghai, China
Exchange Program in Computer Science and Technology Department Sept 2017 — Jan 2018

- Average score: A-

PUBLICATION

- S. Y. Pan*, **C. Y. Lu***, S. P. Lee, and W. H. Peng, "Weakly-Supervised Image Semantic Segmentation Using Graph Convolutional Networks", IEEE International Conference on Multimedia and Expo (ICME), July 2021.
- Y. C. Huang, Y. H. Chen, **C. Y. Lu**, H. P. Wang, W. H. Peng, and C. C. Huang, "Video Rescaling Networks with Joint Optimization Strategies for Downscaling and Upscaling," IEEE Conference on Computer Vision and Pattern Recognition (CVPR), June 2021.

RESEARCH EXPERIENCE

University of Washington - National Chiao Tung University Artificial Intelligence Laboratory Hsinchu, Taiwan
Researcher Assistant, Advisor: Prof. Jenq-Neng Hwang, Prof. Wen-Hsiao Peng Sept 2020 – Dec 2020
Wafer Defect Inspection

- Attended wafer defect inspection project with Vanguard International Semiconductor Corporation; Adopted an unsupervised domain adaptation method to classify each wafer according to its defect; The accuracy of the wafer target dataset has been increased by more than 20% in terms of the source-only model

NCTU Multimedia Architecture and Processing Laboratory Hsinchu, Taiwan
Researcher Assistant, Advisor: Prof. Wen-Hsiao Peng Jan 2021 – Mar 2021
Weakly Supervised Machine Learning

- Substituted the backbone of DeepLabV2 with DRN-105 and introduced a feature propagation framework based on Graph Neural Network in IRNet, which yielded better performance than many state-of-the-art models, including PSA, IRNet, and RRM; our model Weakly Supervised Semantic Segmentation with Graph Neural Network resulted in a mIoU of 69.3%
- Avoided DeepLabV2-ResNet101 loading pre-trained weight of COCO, which should not be used in weakly supervised semantic segmentation; modified its backbone so that people can load pre-trained weight of ImageNet from torchvision and fine-tuned it with our pseudo labels without freezing the batch normalization to obtain a mIoU of 68.8%

Video Rescaling Machine Learning

- Proposed two joint optimization approaches based on invertible neural networks with coupling layers, which yielded better performance than many state-of-the-art models, including IRN, and CAR; our model Video Rescaling Network with Joint Optimization Strategiesfor Downscaling and Upscaling resulted in a PSNR-Y of 33.79dB
- Designed a center loss to largely mitigate the quality fluctuation in the corresponding reconstructed high-resolution video

Independent Study: Weakly Supervised Hand Segmentation for Smart Store Applications Hsinchu, Taiwan
Undergraduate Student, Advisor: Prof. Wen-Hsiao Peng Feb 2018 – Jan 2019

- Created pseudo labels through bounding box and GrabCut; refined the pseudo labels with hand-crafted inner bounding boxes and self-training with DeepLab; processed final segmentations by denseCRF
- Applied the research result to a Smart Store Project of Industrial Technology Research Institute which was funded by Ministry of Science and Technology's College Student Research Program and was selected to the final round of Computer Science Project Competition in NCTU

National Center for High-Performance Computing Hsinchu, Taiwan
Researcher Assistant Feb 2018 – July 2018

- Surveyed papers to find the state-of-the-art model and used SRGAN to do super-resolution; increased the resolution of monitor's images through SRGAN; built another neural network, Deep Image Prior, from scratch to adapt it to our project and obtained a PSNR of more than 23dB
- Adopted Faster-RCNN to do object detection and DCGAN to generate images and ported them two neural networks in Arch Linux and Ubuntu

Shanghai Jiao Tong University Shanghai, China
Exchange Student Sept 2017 – Jan 2018

- Surveyed papers regarding energy efficiency technologies in cloud computing systems; chose ten papers and classified them into five categories, energy efficiency management, virtual machine merging, mobile devices, CPU thermal effects, and economic perspective; analyzed their contributions, novelty, advantages, and disadvantages and wrote a technical survey paper

SELECTED COURSE PROJECTS

Dog Image Classification Sept 2018 – Jan 2019

- Created a dataset of dog images via crawlers and presented K-means and CleanNet to deal with noisy labels; built a PCA, MLP, AutoEncoder, VGG16, and several Resnets for comparison, achieving an accuracy of 97.6%

Simple Does It: Weakly Supervised Instance and Semantic Segmentation Feb 2018 – July 2018

- Reproduced SDI with Tensorflow; made a poster of SDI and presented it in the course workshop; the code is released on GitHub and has received 40 GitHub stars

Bridge Game Sept 2017 – Jan 2018

- Led students from Hong Kong, Malaysia, and China to create a bridge game and visualize it through Tkinter with Python

Facebook Crawler Sept 2017 – Jan 2018

- Received a token from Facebook API, used GET and POST requests in Python to obtain poster from Facebook, and updated the database

AWARDS AND CERTIFICATES

- 2020 GitHub Arctic Code Vault Contributor
- 2018 Ministry of Science and Technology's College Student Research Program
- 2016 Certificate of Appreciation for Vice Teaching Assistant from dean of computer science department
- 2016 Cisco Certified Network Associate Routing and Switching

TEACHING EXPERIENCE

- 2016 Undergraduate Course Vice Teaching Assistant in Introduction to Computers and Programming

EXTRACURRICULAR ACTIVITIES

- 2016 Mei-Chu Hackathon
- 2016 Winter camp of NCTU Programming Challenging Contest Association
- 2015 – 2019 Tennis Club in National Chiao Tung University

SKILLS

Programming Language	C, C++, Python, MATLAB
Machine Learning Software	Tensorflow, Pytorch, Scikit-Learn
Operating System	Arch Linux, Ubuntu, Windows
Language	English (fluent), Mandarin (native)