

# CHENG-YOU LU

(401)340-9875 | cheng-you\_lu@brown.edu | Providence, RI 02906  
johnnylu305.github.io | linkedin.com/in/cheng-you-lu/ | github.com/johnnylu305

## EDUCATION

### Brown University

M.S. in Computer Science; GPA: 4.0/4.0

- **Courses:** Computer Vision / Deep Learning / Advanced Topics in Deep Learning

Rhode Island, USA  
Aug 2021 — Exp. May 2023

### Shanghai Jiao Tong University (SJTU)

Exchange Program in Computer Science and Technology Department; GPA: 3.76/4.3

- **Courses:** Cloud Computing / Thinking and Approach of Programming

Shanghai, China  
Sept 2017 — Jan 2018

### National Chiao Tung University (NCTU)

B.S. in Computer Science; GPA: 3.96/4.3

- **Courses:** Deep Learning and Practice / Intro to Machine Learning / Intro to Pattern Recognition / Intro to Computer Graphics

Hsinchu, Taiwan  
Sept 2015 — June 2019

## PUBLICATIONS

- S. Y. Pan<sup>1</sup>, C. Y. Lu<sup>1</sup>, S. P. Lee, and W. H. Peng, "Weakly-Supervised Image Semantic Segmentation Using Graph Convolutional Networks", **IEEE 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 CVPR**, June 2021

## PROFESSIONAL EXPERIENCE

### NCTU Multimedia Architecture and Processing Lab

Full-time Researcher Assistant, Advisor: Prof. Wen-Hsiao Peng

Hsinchu, Taiwan  
Jan 2021 – Mar 2021

#### Weakly Supervised Machine Learning | [Project Page](#)

- Introduced a feature propagation framework based on Graph Neural Network in IRNet; the model Weakly Supervised Semantic Segmentation with Graph Neural Network resulted in a mIoU of 69.3%

#### Video Rescaling Machine Learning | [Project Page](#)

- Implemented joint optimization approaches based on invertible neural networks with coupling layers, which yielded better performance than IRN, and CAR; the model Video Rescaling Network with Joint Optimization Strategies for 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

### University of Washington-National Chiao Tung University Artificial Intelligence Lab

Full-time Researcher Assistant, Advisor: Prof. Jenq-Neng Hwang, Prof. Wen-Hsiao Peng

Hsinchu, Taiwan  
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 model is 20% higher than the source-only model

## SELECTED PROJECTS

### PointNet-Tensorflow2 | [Project Page](#)

Sep 2021 – Dec 2021

- Implemented PointNet from scratch through Tensorflow-V2; Confirmed the performance through ModelNet40 and ShapeNet.
- Generated multi-label classification and part segmentation Saturn dataset by parametric equations; Achieved 100% accuracy and mIoU.

### Music Style Transfer | [Project Page](#)

Sep 2021 – Dec 2021

- Trained a CycleGAN model that can take in a song from one genre of music and output the same song in a different genre through unpaired data; Introduced LSTM into CycleGAN to capture temporal information;

### DeepFake Detector | [Project Page](#)

Sep 2021 – Dec 2021

- Processed 471.84 GB video data; Detected visual deepfake artifacts by ResNet-50+LSTM; Outperformed naive ResNet-50 4% in terms of accuracy;

### Weakly Supervised Hand Segmentation for Smart Store Applications | [Project Page](#)

Feb 2018 – Jan 2019

- Reproduced SDI with Tensorflow; the code is released on GitHub and has received 40 GitHub stars
- 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

<sup>1</sup>indicates equal contribution

## AWARDS

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- 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

## TEACHING EXPERIENCE

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

## SKILLS

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**Programming Language:** Python/ C/ MATLAB

**Machine Learning Tools:** Tensorflow/ Pytorch/ Scikit-Learn/ Keras / Linux