

Wen-Yen Chang

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RESEARCH INTERESTS

I'm interesting in algorithm design and using them applying on applications, such as computer vision and natural language processing. Specifically the machine learning and deep learning, I have three advance researches about computer vision in conference, including ECCV, WACV and CVGIP.

EDUCATION

National Tsing Hua University (NTHU)

M.Sc. in Electrical Engineering, Advisor: Prof. Min Sun, GPA: 4.3/4.3

Hsinchu, Taiwan

Feb. 2018 – June 2020

National Chung Cheng University (CCU)

B.Sc. in Electrical Engineering, Advisor: Prof. Ching-Chun Huang, GPA: 4.14/4.3

Chiayi, Taiwan

Sep. 2014 – Feb. 2018

SELECTED EXPERIENCES

Machine Learning Research Intern

Kaikutek inc.

May 2020 – Sep. 2020

Taipei, Taiwan

- Research: fast hand-gesture recognition and few-shot learning.
- Cloud Computing System: Server-less training platform by AWS.

DSP Summer Intern

MediaTek

July 2019 – Sep. 2019

Hsinchu, Taiwan

- Tools Chains development: 5G NR field tried tools.
- DSP analysis: HRRAM replay and analysis.

THESIS

Enhance data selection efficiency with variational auto-encoder for object detection's active learning

Research directions: **Active Learning, Unsupervised Learning, Object Detection** | Tools: **Pytorch**

Master Thesis

- It can save 70% labeled cost for achieving a usable model in diverse domains and rare events.
- Uncertainty and diversity information are important for active learning.
- VAE can provide good representation for known the unlabeled data distribution in surveillance cameras.

ParkingLot Services: Car tracking and localization

Research directions: **Object Detection, Sensor Fusion** | Tools: **C++, Android, Tensorflow, Matlab**

Undergraduated Project

- Getting more reliable tracking results, I use image motion to enhance image-based object detection model.
- Eliminating GPS localization error, I use trajectory information to reduce the white noise by Kalman Filter.
- Checking parking location for finding, I fuse GPS and image localization information by driving behavior matching.

PUBLICATIONS

Shih-Han Chou, Cheng Sun, Wen-Yen Chang, Wan-Ting Hsu, Min Sun, Jianlong Fu, "360-Indoor: Towards Learning Real-World Objects in 360° Indoor Equirectangular Images". In **WACV**, 2020. (With Microsoft Asia)

Wen-Yen Chang, Wen-Huan Chiang, Shao-Hao Lu, Tingfan Wu, Min Sun, "Bias-Aware Heapified Policy for Active Learning". In **CVGIP**, 2019. (With Umbo)

Yu-Ting Chen, Wen-Yen Chang, Hai-Lun Lu, Tingfan Wu, Min Sun, "Leveraging Motion Priors in Videos for Improving Human Segmentation". In **ECCV**, 2018. (With Umbo)

AWARDS AND HONORS

Spring 2020, **Phi Tau Phi Scholastic Honor**: top 1 master student in the electrical engineering department of NTHU.

Fall 2018, **Appier Scholarship**: for outstanding students in their research with top conference papers.

Fall 2017, **The High Distinction Award**: the 1st prizes for undergraduated project of electronic engineering in CCU.

Fall 2017, **The Chair Award**: the most potential product in undergraduated projects of electronic engineering in CCU.

Fall 2014, 2015, 2016, Spring 2014, 2016, **Academic Achievement Award**: top 3 students in a semester in CCU.

Computer Vision Application

- **Cinema-graph:** Automatically create Cinema-graph from video, we apply few-shot labeling tool and use computer vision techniques. [\[pdf\]](#), [\[slide\]](#)
- **Home care App.:** A android application to recognize the number on blood-pressure machine. The recognition system need to deal with multiple material display. [\[pdf\]](#)
- **OCR application:** In order to crack the reCAPTCHA, I create a characters detection to automatic buy the ticket.

Robotics Application

- **ORB SLAM:** system build-up (ROS, PCL). [\[video\]](#)
- **Indoor localization:** localization by gyroscope and using QR-code to correct localization error. [\[video\]](#)
- **3D reconstruction:** apply structure from motion algorithm on 3D gastrointestinal tract reconstruction. [\[video\]](#)
- **3D Game:** using OpenGL with shader code to create a world of game. [\[video\]](#)

MCU application

- **8051 Assembly:** LCD game. [\[slide\]](#)
- **Embedding communication system with C:** auto-detect wearable device status, and using Lora to communication for control and alert. [\[video\]](#)
- **Raspberry pi with camera:** upload data automatically for violent detection.
- **Bluetooth communication:** for remote controlling the robot(Arduino).

Market analysis (auction rule): taxi-bidding simulation [\[pdf\]](#)/ [\[video\]](#)

RELATED COURSES

Computation photography (A+)

- EE 694100

Computer Vision (A+)

- CS 4105109

Machine Learning (A+)

- EE 4155401

Neural Networks (A)

- CS 4105210

Introduction to Image Processing (A+)

- EE 4153919

ACADEMIC ATTENDANCE

Computer Vision, Graphic and Image Processing (CVGIP), Aug. in Taitung, Taiwan, 2019.
Proceedings of the European Conference on Computer Vision (ECCV), in Munich, Germany, 2018.

ABILITIES

Programming:

- **Programming language:** C/C++, C#, Java, Python, Matlab, Assembly
- **Deep Learning Frameworks:** Caffe, Tensorflow, Pytorch
- **Web Tools:** html, css, javascript, ruby
- **UI Tools:** MFC, QT

Hardware/Firmware:

- **Without UNIX OS:** 8051, Arduino, Nu-LB-NUC140
- **With UNIX OS:** Raspberry-Pi zero, TX2(ROS)
- **Hardware Describe language:** Verilog

Misc. : OpenCV, OpenGL, Github, Docker, Vim, Linux, LATEX

Language Abilities:

- **Chinese(Tranditonal):** Native
- **English(Listening/Speaking/Reading/Writing):** (Advanced/Advanced/Fluent/Fluent)