Chi-Jui (Jerry) Ho

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RESEARCH INTERESTS

Image Processing, Computer Vision, and Machine Learning.

EDUCATION

National Taiwan University (NTU) **Taipei, Taiwan**
B.S. in Electrical Engineering *September 2015 - June 2019*
Cumulative GPA: 3.88 / 4.30; last-60 GPA: 4.10 / 4.30

PUBLICATIONS

- C. J. Ho, C. C. Chan, and H. H. Chen, "AF-Net: A Convolutional Neural Network Approach to Phase Detection Autofocus," accepted by *IEEE Transactions on Image Processing*, doi: 10.1109/TIP.2019.2947349 [PDF]
- C. J. Ho and H. H. Chen, "On the Distinction between Phase images and Two-View Light Field for PDAF of Mobile Imaging," accepted by *Electronic Imaging*, 2020 [PDF]
- C. C. Chan, M. Calderon-Delgado, C. J. Ho, M. Y. Lin , J. W. Tjiu, S. L. Huang , and H. H. Chen, "Detecting Mice Squamous Cell Carcinoma from Sub-Micron OCT Images by Deep Learning," (In preparation)

RESEARCH EXPERIENCE

Multimedia Processing and Communications Lab, NTU **Taipei, Taiwan**
Research Assistant (with Prof. Sheng-Lung Huang and Prof. Homer H. Chen) *July 2019 - present*
Research topic: *Skin Cancer Detection in Optical Coherence Tomography (OCT) Imaging*
- Designed a deep learning algorithm that enables accurate and non-invasive diagnosis.
- Achieved a 90% accuracy by a CNN-based classifier with an enhanced regularization method.
- Analyzed the pathological features with model interpretation.

Multimedia Processing and Communications Lab, NTU **Taipei, Taiwan**
Undergraduate Research Assistant (with Prof. Homer H. Chen) *September 2017 - June 2019*
Research topic: *Phase Detection Autofocus (PDAF)* [Demo Video]
- Proposed a CNN-based approach that finds the in-focus position in two lens movements regardless of noise in most cases. This work will appear in *IEEE Transactions on Image Processing*.
- Clarified the misconception that phase images is equivalent to two-view light field for PDAF. This work will appear in *Electronic Imaging 2020*.

TEACHING EXPERIENCE

Department of Electrical and Engineering, NTU **Taipei, Taiwan**
Teaching Assistant (with Prof. Chien-Mo Li) *2018 Spring and 2019 Spring*
EE1006: Cornerstone EECS Design and Development
- Designed the final project for freshmen students with 7 professors from different fields.
- Instructed 8 teams of students in implementing the self-driving car and searching algorithm.

HONORS & AWARDS

1st prize in NTUEE Undergraduate Innovation Award *September 2019*
- Awarded out of all undergraduate research assistants in NTUEE.

6th place in AI Rush 2019 (100 teams attended) *August 2019*
- On behalf of Taiwan to attend the Asia-wide AI contest held by LINE and Naver.

College Student Research Creativity Award *July 2019*
- Ranked top 10 % in 2000 projects.

College Student Research Scholarship, MOST, TW *July 2018 - April 2019*
- Awarded to excellent students by Ministry of Science and Technology, Taiwan.

1st place in the final project contest of Computer Vision course (graduate level) *January 2019*
- Generated accurate depth maps in realistic scenes under challenging conditions.

1st place in the final project contest of Digital System Design course *June 2018*
- Achieved the lowest AT value (Area $\times$ time) of the pipelined MIPS design in the contest.

SELECTED TERM PROJECTS

A Survey of Optimization in Deep Neural Network *June 2019*
- Analyzed how to guarantee the convergence rate of a deep neural network through over-parameterization.

Breakout AI *January 2019*
- Automatically cleared the breakout stage regardless of the randomness.

Flyback Circuit *January 2019*
- Implemented a flyback circuit to achieve DC-DC and AC-DC power transformation.

Object Detection *June 2018*
- Implemented a Siamese network with specific training schedules to deal with few-shot learning.

Chinese QA *January 2018*
- Implemented the FastQA model to select the key sentence from text written in Chinese.

SELECTED COURSES TAKEN

Computer Vision	Computer Vision: from recognition to geometry Deep Learning for Computer Vision
Artificial Intelligence	Mathematical Principles of Machine Learning, Machine Learning, Introduction to Artificial Intelligence and Machine Learning
Mathematics	The Design and Analysis of Algorithms, Convex Optimization Discrete Mathematics
Hardware	Digital System Design, Integrated Circuit Design Electrical Engineering Lab (digital Circuit), Power Electronics Laboratory

Underlined courses are at graduate level

KEY SKILLS

Programming Language	Python, C++, Verilog, Matlab, Latex
Frameworks	Pytorch, OpenCV
Natural Language	Chinese (native speaker), English (fluent)