Yen-Ting **Huang**

Visual Information Processing Lab · Research Assistant · National Chengchi University

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Summary

I have 5 yeas experience in developing computer vision applications ranging from ego-vision systems to unmanned aerial vehicle (UAV) systems. I have also published 6 papers including 3D localization, image restoration, and visual navigation techniques, and 3 papers are under review. My research interest is to design effective yet efficient vision algorithms for addressing real-world problems under uncertainty. Currently, I am working on taking advantage of Spatio-temporal consistency and geometric information to further optimize long-term prediction performance.

Education

National Chengchi University *Taipei City,Taiwan*

B.S. in Computer Science *2012 - 2016*

· Minor : Mathematical Finance Program and Big Data Analytical Program

Publications

[1] **Enhancing object detection in the dark using U-Net based restoration module**. ***Yen-Ting Huang***, Yan-Tsung Peng, Wen-Hung Liao, International Conference on Advanced Video and Signal-based Surveillance (AVSS) *2019*

[2] **Monocular Visual Object 3D Localization in Road Scenes**. Yizhou Wang, ***Yen-Ting Huang***, Jenq-Neng Hwang, ACM International Conference on Multimedia (ACM MM) [Website] *2019*

[3] **UAV System Integration of Real-time Sensing and Flight Task Control for Autonomous Building Inspection Task**. Gong-Yi Li, Ru-Tai Soong, Jyi-Shane Liu, ***Yen-Ting Huang***, International Conference on Technologies and Applications of Artificial Intelligence (TAAI) [Video] *2019*

[4] **Real-Time Autonomous UAV Task Navigation using Behavior Tree**. Ru-Tai Soong, Gong-Yi Li, ***Yen-Ting Huang***, Jyi-Shane Liu, International Conference on Intelligent Robots and Systems (IROS), Behavior Tree in Robotic Systems Workshop *2019*

[5] **Analyzing Social Network Data Using Deep Neural Networks: A Case Study Using Twitter Posts**. Wen-Hung Liao, ***Yen-Ting Huang***, Tsu-Hsuan Yang, Yi-Chieh Wu, IEEE International Symposium on Multimedia (ISM) *2019*

[6] **An Efficient Tool for Reading Improvement with Google Glass**.***Yen-Ting Huang***, Wen-Hung Liao, National Computer Symposium (NCS) *2015*

[7] **DEEP LEARNING IS ONLY AS GOOD AS ITS DATA? An Investigation Using Heterogeneous Data Sets**. Wen-Hung Liao, ***Yen-Ting Huang***, submitted to ICASSP 2020 conference *under review*

[8] **Compression of Convolutional Neural Networks based on Kernel Redundancy**. Wen-Hung Liao, ***Yen-Ting Huang***, Nai-Wei Chen, submitted to Journal of Multimedia Tools and Applications *under review*

[9] **Accurate Line Following on Vertical Surface with Probability Grid Navigation Model**. Jyi-Shane Liu, Gong-Yi Li, ***Yen-Ting Huang***, Ru-Tai Soong, submitted to Journal of Field Robotics *under review*

Industrial and Academic Experience

Visual Information Processing Lab in Department of Computer Science at National Chengchi University under Pervasive AI Research (PAIR) Labs (supervised by Prof. Wen-Hung Liao) *Taiwan*

Research Assistant *Sep. 2017 - Present*

- Developing an autonomous navigation system based on vision cues that incorporate SLAM self-localization and collision avoidance.
- Building DL-based image restoration algorithms to improve object detection in degraded images such as excessive noise or poor lighting conditions.
- Designing a lightweight and explainable CNN model for real-time inference while running with limited computer hardware resources.
- Managing the Drone team to develop and integrate specific modules composed of motion planning, interface, perception and cognition.

Information Processing Lab at University of Washington (supervised by Prof. Jenq-Neng Hwang) *Seattle*

Research Intern *Jan. 2019 - Feb. 2019*

- Utilized Orb-Slam 2.0 to locate and establish the space model of the drone in the corresponding environment.
- Integrated depth map and road segmentation, which are generated from MonoDepth and DeepLab respectively, to accurately estimate the ground plane for 3D object localization.

Institute of Information Science, Academia Sinica (supervised by Prof. Mark Liao) *Taiwan*

Research Assistant *Feb. 2016 - Jun. 2016*

- Applied a structural SVM that fuses visual features and pairwise correlations among people to abnormal activity detection for training.

MediaTek Inc. *Taiwan*

Multimedia Algorithm Development Intern *Jul. 2015 - Sep. 2015*

- Collected a gesture dataset with the goal of handling light and pose variances, and designed an easy-to-use tool for fast labeling.
- Designed an adaptive segmentation algorithm for extracting digits on various credit cards.

Viscovery Ltd. *Taiwan*

Vision Algorithm Development Intern *Jan. 2015 - Mar. 2015*

- Designed an adaptive segmentation algorithm as a preprocessing module for extracting digits in various credit cards.
- Developed a robust SVM model which combines gradient-based and Spatial–temporal features.

Visual Information Processing Lab in Department of Computer Science, National Chengchi University (supervised by Pro. Wen-Hung Liao) *Taiwan*

Research Assistant *Jul. 2014 - Jan. 2015*

- Built the interactive applications with wearable devices to improve the experience of interactive performance.
- Developed an assistive tool using Google Glass to enhance the comprehension of English articles for non-native speakers.

Honors & Awards

2019	**5th Place**, ICCV Competition - Vision Meets Drones: A Challenge (2nd prize in MOT track 1)	*Seoul, S.Korea*
2019	**3rd Award**, China Technical Consultants Inc.(CTCI) Foundation - Creative Competition for AI Novice Service	*Taiwan*
2019	**5th Place**, ICIP Competition - Mosquito Breeding Site Hunting for Dengue Fever Control	*Taiwan*
2019	**2nd Award**, Yu Shiu Educational Foundation (YSEF) - The 17th Yu Shiu Award	*Taiwan*
2016	**3rd Award**, Industrial Development Bureau, Ministry of Economics Affairs - 3D Printing Design Challenge	*Taiwan*
2015	**College Student Research Scholarship** , National Science Council (NSC)	*Taiwan*

Patent

New type of UAV accurate line-following methods for arbitrary line on vertical surface, under review

Jyi-Shane Liu, **Yen-Ting Huang**, Gong-Yi Li

Teaching Experience and Talks

Mathematics and Information Technology Club

Invited guest lecture for cutting-edge computer vision techniques (regular monthly lectures) *2019 Fall*

AI Meetup @ Taipei

Invited lecture for developing a autonomous drone system for collision avoidance. *2019 Apr.*

Drone Controlling Workshop

Invited lecture for programming Tello drones using Python and ROS. *2019 Dec.*

Department of Computer Science, National Chengchi University

Teaching Assistant for System Development and Implementation of Drone Intelligence (3 credits, grads) *2017 Fall*

Ongoing Projects

Low-light video restoration using temporal illumination constraints

- Designing illumination consistency loss to ensure the distribution of brightness between consecutive images.
- Combining edge-aware loss, illumination consistency loss, and multi-layer reconstruction loss with learnable weighting parameters to improve the restoration of conformity.

Two-stage denoising mechanisms to improve the performance of feature matching

- Applying learnable guided layer as a course stage to smooth the noise pixels and reconstructing the visual details of an image with convolutional neural networks.

Autonomous intelligent drone system for inspection based on Facade Segmentation

- Developing a segmentation model to project identified pixels to the real world environment for adaptive scan path planning.

Skills

Programming	Python, C/C++, MATLAB
Deep Learning Framworks	PyTorch, Tensorflow, Keras
Image processing and ML	Scikit-learn, Opencv, Scikit-image
Tools	LaTeX, MS Office