Curriculum Vitae (Yu-Ting Lai)

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MOTIVATES/DEDICATED/CREATIVE
personality

ROBOTICS/AUTONOMOUS CARS/PERCEPTION
areas of research interests

EDUCATION

National Chiao-Tung University   **Hsinchu, Taiwan**
M.S., Electrical and Control Engineering   08.2016 – 09.2018

- **Published Paper - A Texture Generation Approach for Detection of Novel Surface Defects:** Our detection model improves the accuracy by 5% and reduces the false-positive rate by 90% over real industrial inspection datasets.
- **Advisor:** Prof. Jwu-Sheng Hu
- **Master Thesis - Industrial Anomaly Inspection based on Neural Networks and Generative Adversarial Networks:** Evaluated all possible solutions for industrial surface inspection.

National Tsing-Hua University   **Hsinchu, Taiwan**
B.S., Power Mechanical Engineering   09.2012 - 06.2016

- **Advisor:** Prof. D. Shaw
- **Independent Study - Design and Simulation of a Novel Bird-Lung System with Compressed Air-Driven Pneumo-Hydraulic Actuator:** We used simulation to evaluate the validity of the pneumo-hydraulic motor and built the system with pneumo-sensors to control the motor.

PUBLICATIONS

- Y. T. K. Lai and J. S. Hu, "Annotation-free Industrial Anomaly Detection Using Generative Neural Network Models," in *IEEE Transactions on Image Processing*, 2018. (*under review*)

- Y. T. K. Lai and J. S. Hu, "A Texture Generation Approach for Detection of Novel Surface Defects," in *IEEE International Conference on System, Man, and Cybernetics*, 2018.

- Y. T. K. Lai, J. S. Hu, W. Y. Chiu, Y. H. Tsai, "Industrial Anomaly Detection and One-Class Classification using Generative Adversarial Networks," in *IEEE/ASME International Conference on Advanced Intelligent Mechatronics*, 2018. (*oral presentation*)

- J. L. Kuo, H. W. Chen, Y. T. K. Lai, E. R. Hsieh, Steve S. Chung, T. P. Chen, S. A. Huang, T. J. Chen, and O. Cheng, "Energy Efficient FinFET-Based Field Programmable Synapse Array (FPSA) to Feasible the Hardware for One-shot Learning on EDGE AI," in *IEEE VLSI Tech. Symposium on*, Honolulu, USA, Jun., 2018. (*oral presentation*)

PATENT

- Y. T. Lai, J. S. Hu, Y. H. Tsai, and K, H, Chang, "Industrial Image Inspection Method and System and Computer Readable Recording Medium." (pending)

AWARDS

- 2019 Institute Distinguished Research Award, Industrial Technology Research Institute, Taiwan
- 2019 Innovation Award, Industrial Technology Research Institute, Taiwan
- 2018 Institute Distinguished Research Award, Industrial Technology Research Institute, Taiwan

EXPERIENCES

National Taiwan University   **Taipei, Taiwan**
Research Assistant, Electrical Engineering Dept.   07.2019 – Present
- Assist the development of surgical robots

MMSL, Industrial Technology Research Institute (ITRI)   **Hsinchu, Taiwan**
Intern/Young Researcher, Self-Driving Vehicles Dept.   08.2018 – 01.2019
- Sensor fusion of multiple cameras and LiDAR for object recognition and tracking
- Traffic light detection and recognition

MMSL, Industrial Technology Research Institute (ITRI)   **Hsinchu, Taiwan**
Intern/Young Researcher, Machine Vision Dept.   08.2017 – 07.2018
- Developed a novel industrial inspection algorithm using generative adversarial networks for industrial automation

National Chiao-Tung University   **Hsinchu, Taiwan**
Lab Leader, Embedded System Laboratory   03.2017 – 07.2018
- Lab maintenance, website organization, lab event organization

MMSL, Industrial Technology Research Institute (ITRI)   **Hsinchu, Taiwan**
Intern/Young Researcher, Service Robot Dept.   02.2016 – 07.2017
- Led a four-member team to develop a random bin picking project for robot manipulator
- Product development of a high-precision calibration module for robot manipulators

LANGUAGE AND TECHNOLOGIES

- **Programming Language:** C, C++, Python, MATLAB, LabView

- **Frameworks:** OpenCV, Point Cloud Library (PCL), Caffe, Tensorflow, Pytorch, Visual Studio, ROS, Gazebo

- **Embedded Board:** Arduino, Raspberry Pi, ARM

- **Prototyping:** Solidworks, Milling, Drilling, 3D printing

- **Language:** Mandarin (proficient), English (proficient), German (beginner)