

Kevin Lai

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NOTABLE PROFESSIONAL EXPERIENCE

Graduate Student Researcher, Mechatronics and Controls Laboratory, UCLA

Feb. 2020 – Present

- Lead a multi-disciplinary team of 8 people between the Ophthalmology and Mechanical Engineering divisions.
- Understand system-level (kinematics and dynamics) robotic surgical platforms and surgically evaluate the developed technologies on *ex-vivo* pig eyes.
- Design and develop an accurate *pressure control* system for ophthalmic use with feedback and advanced controllers.
- Perform image-processing on optical coherence tomography (OCT) B-scans and A-scans and develop *lens equator visualization* technologies.
- Assisted grant writing and was awarded \$500k on the Advanced Research Projects Agency for Health (ARPA-H) research.

Teaching Assistant, Senior Design Capstone I/II (MAE162D/E), UCLA

Jan. 2022 – Present

- Teach and supervise 100 senior students in succeeding in autonomous warehouse vehicle projects in mechanical design, fabrication, circuit design, electronics, and software integration.

Assistant Researcher, Industrial Technology Research Institute (ITRI), Hsinchu, Taiwan

Jun. 2018 – Feb. 2019

- Collaborated with a team of 12 people and demonstrated fully autonomous driving of 15 km in an urban area without human engagement.
- Developed a traffic light detection and recognition framework/algorithm on autonomous vehicles by integrating 3D LiDAR localization and camera image processing.

Graduate Student Researcher, Embedded Systems Laboratory, NCTU, Hsinchu, Taiwan

Sep. 2016 – May. 2018

- Developed an automated anomaly inspection on data collected from industrial partners using deep learning and generated adversarial network.

SELECTED PUBLICATION & PATENT

- **Y.-T. Lai**, A. Barzelay, and T.-C. Tsao. "Add-On Fluidic Control System for Enhancing Intraocular Pressure Stabilization and Reducing Tissue Deformation" In *2024 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*. IEEE, 2024.
- Lee, Y.-H., **Y.-T. Lai**, M. J. Gerber, J. Dodds, J.-P. Hubschman, J. Rosen, and T.-C. Tsao. "Accurate Robotic Posterior Capsule Polishing With Tissue Stabilization." *IEEE/ASME Transactions on Mechatronics* (2023).
- **Y.-T. Lai**, J.-S. Hu, Y.-H. Tsai, and K.-H. Chang. "Industrial image inspection method and system and computer readable recording medium." U.S. Patent 11,315,231, issued April 26, 2022.
- **Y.-T. Lai**, J.-S. Hu, Y.-H. Tsai, and W.-Y. Chiu. "Industrial anomaly detection and one-class classification using generative adversarial networks." In *2018 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*, pp. 1444-1449. IEEE, 2018.

EDUCATION

2025	Ph.D. in Mechanical Engineering (expected to graduate in June), University of California, Los Angeles (UCLA), Los Angeles, USA
2018	M.S. in Electrical and Control Engineering , National Chiao Tung University (NCTU), Hsinchu, Taiwan
2016	B.S. in Mechanical Engineering , National Tsing Hua University (NTHU), Hsinchu, Taiwan

HONORS & AWARDS

2019	Pilot Project on Scholarships for Taiwanese Studying in the Focused Fields at Top Foreign Universities, Ministry of Education, Taiwan
2019	Innovation Award, ITRI, Taiwan

SKILLS

Coding:	C/C++, Python, MATLAB, Simulink, LabVIEW, ROS
Hardware:	Arduino, Raspberry Pi, National Instruments, Texas Instruments LAUNCHXL-28379D
Robotics:	Feedback/Feedforward/Repetitive control, Trajectory planning, Robot kinematics/dynamics, Robot calibration, Image-based robot navigation
Prototyping:	Solidworks, Milling, Drilling, 3D printing
Language:	Mandarin/Taiwanese (Native), English (Proficient)
Others:	LaTeX, Adobe Illustrator