Yu-Fan Chen

INTJ Personality

Contact

Omori, Ota-ku, Tokyo

080-5049-1505

b93502137@gmail.com

Languages

Chinese (Native)

English (Conversational)

Japanese (Conversational)

Work Experience

2025

Solution/Software Development
- Data Center/Energy Infrastructure Solution
- Industrial/Building Automation Solution

2024

Energy Storage System
- ESS Demo Site (CAD, PLC)
- Field Application Engineering

2023

Document Automation
- Robotic Process Automation (RPA)

Product Development
- Servo Valve (Linear Motor)

2022

Software Development
- Robotic Arm Tool (Python)

2021

Industrial Automation
- Single Axis Robot (HMI, Servo Motor)
- Field Application Engineering

2020

Computer Skills

☆☆☆ ChatGPT (Vibe Coding)
☆☆☆ Python (SQLite/OpenCV/ Numpy/Pandas/Matplotlib)
☆☆☆ JavaScript (Three.js/GSAP)
☆☆☆ AutoCAD (2D CAD)
☆☆☆ Blender/FreeCAD (3D CAD)
☆☆ SOLIDWORKS/CATIA (3D CAD)
☆☆ SimulationX (1D CAE)
☆☆ MATLAB/Simulink (MBD)
☆ ANSYS (3D CAE)
☆ Cura (3D Printing)
☆ FRED (Optical Simulation)
☆ UiPath (RPA)
☆☆ Google Forms/Sheets/Looker
☆☆ Microsoft Power BI
☆☆☆ Microsoft Office (Word/Excel/PowerPoint)

Language Skills

2023 Permanent Residence VISA
2020 JLPT N1 (Passed)
2015 TOEFL iBT (80 Points)
2010 TOEIC (750 Points)

Education & Internship

2011 – 2018 **Doctor of Philosophy, National Taiwan University (NTU)**
- Graduate Institute of Photonics and Optoelectronics (GIPO)
- Department of Mechanical Engineering (ME)

2016 – 2017 **Visiting Scholar, University of Tokyo (UTokyo)**
- Research Center for Advanced Science and Technology (RCAST)

2013 – 2015 **Intern & Project Executor, Industrial Technology Research Institute (ITRI)**
- Mechanical and Mechatronics Systems Research Laboratories (MMSL)

Qualifications

2025.09 **Japan Association for Financial Planners (JAFP)**
- The 3rd-grade Certified Skilled Professional of Financial Planning Exam

2024.09 **Information Technology Engineers Examination (ITEE)**
- Fundamental Information Technology Engineers Examination

2024.04 **Examination Center for Electrical Engineer (ECEE)**
- Third Class Electrical Chief Engineer

Selected Position & Detailed Description

Research and Development Engineer & Data Analyst

Software Development: Web 3D Demo for Containerized Data Center (JavaScript)

- Designed an interactive website interface optimized for iPad browsers.
- Created a 3D model of a containerized data center, including server racks, cooling units, main distribution panel, surveillance cameras, and fire protection systems.
- Developed a pre-sales tool for automated, customer-specific 2D layout proposals.
- Set up a sales demonstration for a professional presentation at the CEATEC exhibition.

Solution Development: Design and Proposal for Containerized Data Center

- Led the standardization of containerized data center (CDC) designs, covering critical aspects such as cooling systems, electrical configurations, spatial optimization, and more.
- Developed comprehensive proposal materials, including 2D layouts, 3D models, computational fluid dynamics (CFD) simulations, power usage effectiveness (PUE) calculations, and capital expense (CapEx) & operational expense (OpEx), to support project design and implementation.

Software Development: Robotic Arm Simulator (Python)

- Developed forward/inverse kinematics and spatial transformations for a 3D robotic arm simulator, integrating linear algebra and robotics principles.
- Designed a parametric GUI for 3D arm manipulation via joystick, featuring path planning, obstacle avoidance, and automated position setting.
- Synchronized virtual 3D arm motion with servo motors and a 2D top view for real-time path tracking and demonstration.

Industrial Automation: Single Axis Robot (HMI / Servo Motor)

- Developed an HMI interface for servo motion control with mobile-accessible remote control via integrated wireless router.
- Delivered client demonstrations and created training videos to facilitate user understanding and operational training.

Technical Drawing & System Design: Data Center & Energy (AutoCAD / PLC)

- Created 2D drawings including equipment layouts, single-line diagrams, and wiring diagrams.
- Programmed PLC systems to establish communication (RS485/CAN) and monitoring across battery, power conditioning system (PCS), and energy management system (EMS).

Robotic Process Automation: Repetitive Task (UiPath / Python / PowerBI)

- Defined data formats and workflows for tasks such as employee attendance, email automation, and inventory management, while automating dashboard visualizations to streamline data analysis and reporting.

Project/Product Manager & Market Research Analyst

Product Development: Servo Hydraulic Linear Motor

- Collaborated with 5 R&D teams and a valve vendor to develop a cutting-edge product.
- Conducted comprehensive market surveys and analyses, assessing applications, specifications, competitors, and patents to drive product innovation.

Solution Development: Data Center & Energy Infra., Building & Industrial Auto.

- Led the introduction of new solution packs to the Japan market, collaborating with clients to develop proof of concepts (POCs) that demonstrated solution effectiveness.
- Conducted market research and analysis to identify trends and opportunities, informing strategic decisions and product development.

Main Projects: Digital Transformation

CEATEC Exhibition: Web 3D Demo for DC / IA Solution Presales Tool (2025)

Device
a) Laptop
b) iPad
c) Buffalo Router
d) TV Monitor

Language
a) JavaScript

Library
a) Three.js

Function
a) Homepage: Booth Plan 3D Model
b) DC Solution: Selection / Filter Mode
c) IA Solution: Automation Machine

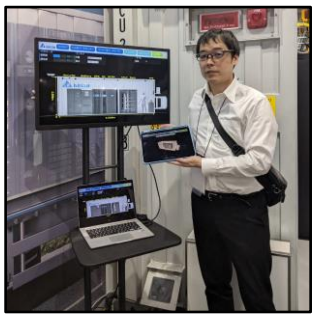
CEATEC Exhibition: Web 3D Demo for Containerized Data Center (2024)

Device
a) Laptop
b) iPad
c) Buffalo Router
d) TV Monitor

Language
a) JavaScript

Library
a) Three.js

Function
a) Interactive Website for iPad Browser
b) 3D Model & 2D Layout Demonstration
c) Pre-sales Tool for Professional Presentation

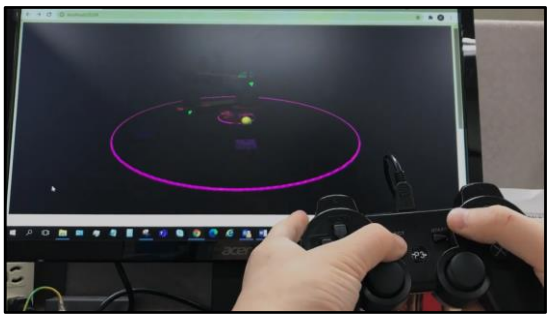


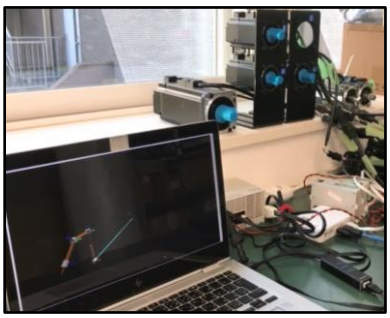
Robotic Arm Simulator (2022)

Language
a) Python

Library
a) Vpython

Function
a) Joystick Control
b) Pick & Place
c) Digital Twin



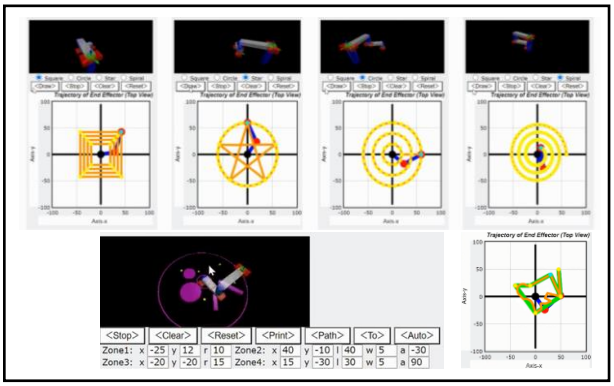


Robotic Arm Tool (2021)

Language
a) Python

Library
a) Vpython

Function
a) 3D Model with Parametric Design
b) Path Planning
c) Obstacle Avoidance



Single Axis Robot (2020)

Device
a) HMI
b) Servo Motor
c) Ball Screw

Function
a) Jog Mode
b) PR Mode (Position Register)
c) Edit Mode (VEL / ACC / DCL)
d) Remote Control with Pad/Phone

Side Projects: Digital Automation

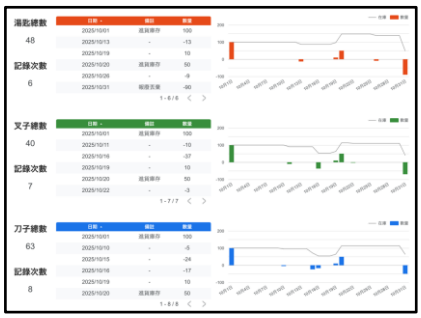
Business Intelligence Dashboard for Data Visualization (2025)

Google Forms → *Input Data* → Google Sheets → *Auto Plot* → Looker (PART OF Google Cloud)

#1 Blood Pressure Tracker

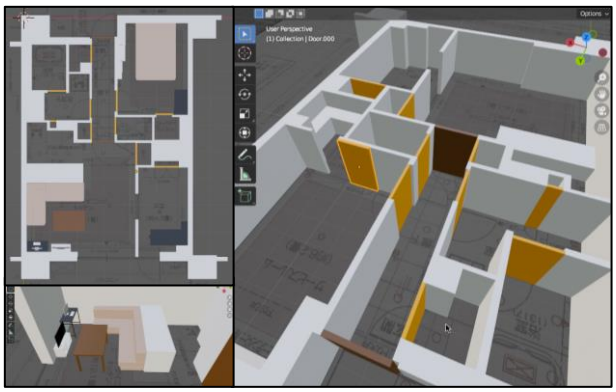
#2 Group Expense Splitter

#3 Inventory Management



Interior Design Floor Plan (2024)

blender



BIM Automation (2025)

blender + python

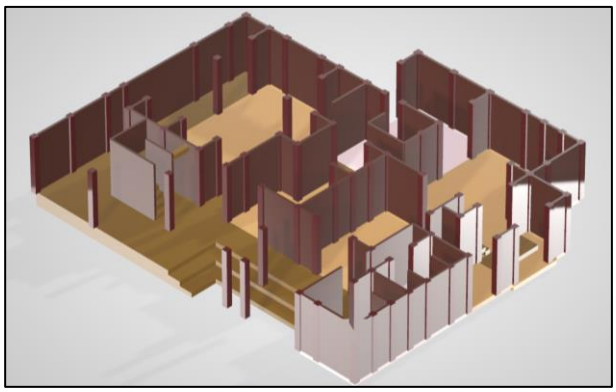


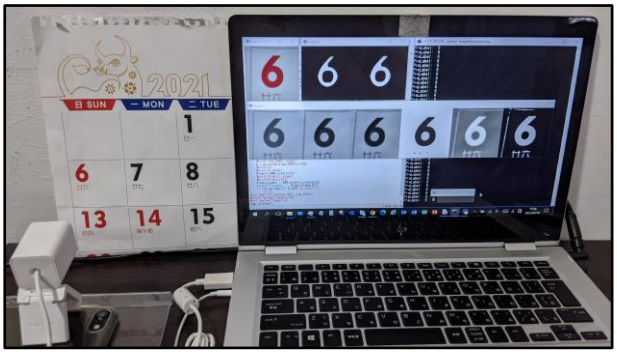
Image Recognition (2022)

Device
a) Camera (300,000 pixel)

Library
a) OpenCV
b) Keras/Tensorflow MNIST

Language
a) Python

Function
a) Reading Number



IoT Visualization (2023)

Device
a) SwitchBot Plug (Sensor)
b) Buffalo Router

Platform
a) Grafana (SQL)

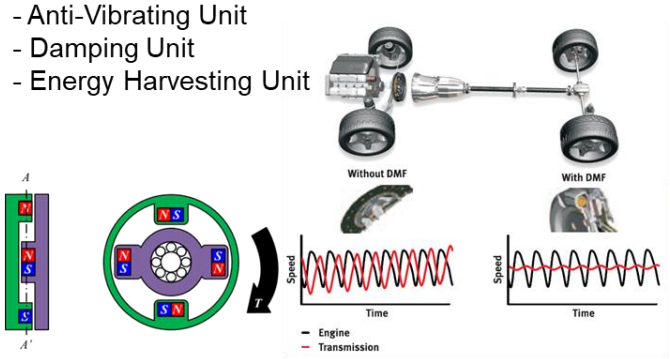
Language
a) Python

Function
a) Real-time Data Visualization

Doctoral Dissertation & Internship Projects

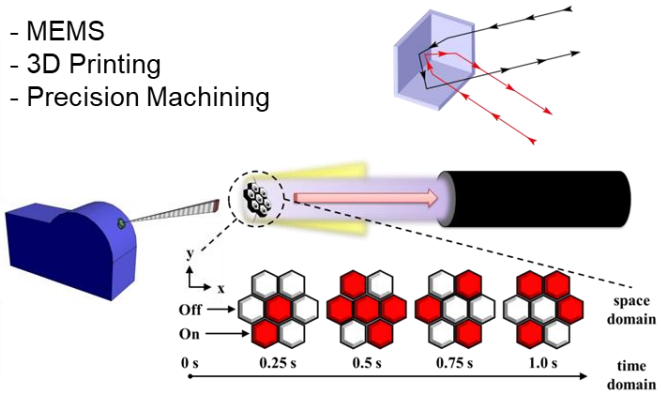
NTUME: Magnetic Dual Mass Flywheel

- Anti-Vibrating Unit
- Damping Unit
- Energy Harvesting Unit



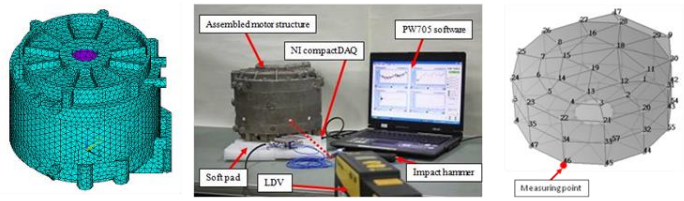
NTUGIPO: Tunable Corner Cube Retro-Reflector

- MEMS
- 3D Printing
- Precision Machining



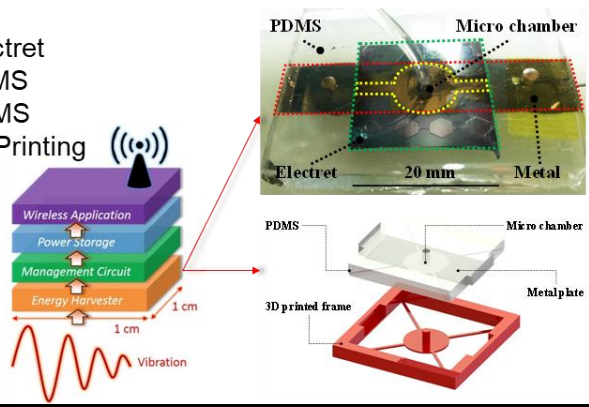
ITRI: Motor Structure and Transmission System

- Finite Element Method
- Modal Analysis & Testing
- Harmonic Response Analysis
- Rotor Dynamic Analysis



UTokyo: Electret-Based Energy Harvester

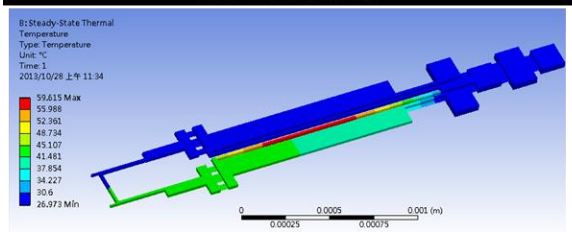
- Electret
- PDMS
- MEMS
- 3D Printing



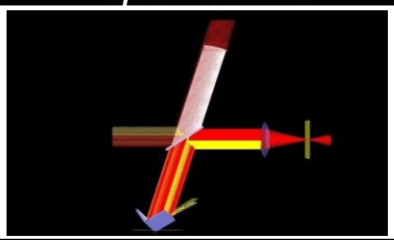
Software Experience

CAD Software

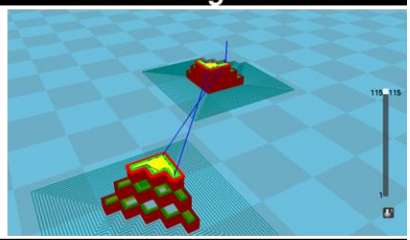
CAE Software



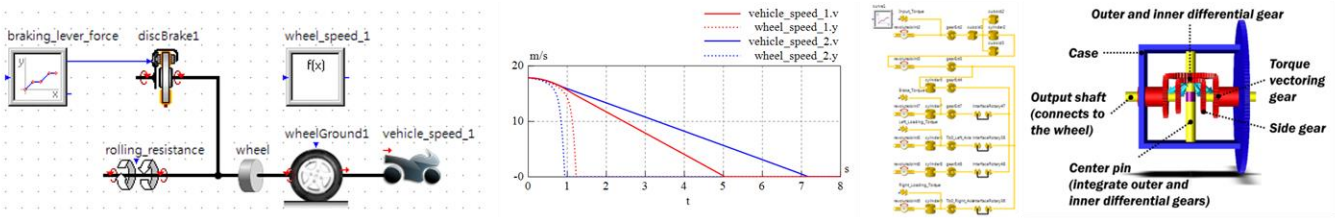
Optics Software



3D Printing Software



Multi-Physics Simulation Software



Publications & Presentations

Journal Articles

[1] **Yu-Fan Chen**, Yen-Hung Wang, and Jui-che Tsai, "Enhancement of Surface Reflectivity of Fused Deposition Modeling Parts by Post-processing," Optics Communications, 430, pp. 479-485, 2019.

[2] **Yu-Fan Chen**, Satoshi Inoue, and Hiroshi Toshiyoshi, "An Electret-Based Implantable Energy Harvester with Liquid Cells (MEMS vs. 3D Printing Fabrication)," IEEJ Transactions on Sensors and Micromachines, 138(9), pp. 401-405, 2018.

[3] **Yu-Fan Chen**, Yen-Hung Wang, and Jui-che Tsai, "Study of wire electrical discharge machined folded-up corner cube retroreflector with a tunable cantilever beam," Optical Engineering, 57(3), 035104, Mar. 2018.

[4] **Yu-Fan Chen**, I-Ming Chen, Joshua Chang, and Tyng Liu, "Design and Analysis of a New Torque Vectoring System with a Ravigneaux Gearset for Vehicle Applications," Energies, 10(12), 2157, Dec. 2017.

[5] **Yu-Fan Chen**, Bing-jun Yang, and Jui-che Tsai, "Surface-Micromachined MEMS Tunable Three-Leaf Trefoil-Type Corner Cube Retro-Reflector for Free-Space Optical Applications," IEEE Journal of Selected Topics in Quantum Electronics, Vol. 21, No. 4, No. pp. 123-129, Jul.-Aug. 2015.

[6] Dian-Sheng Chen, Po-Fan Yeh, **Yu-Fan Chen**, Chun-Wei Tsai, Chun-Yi Yin, Ren-Jie Lai, and Jui-che Tsai, "An electrothermal actuator with two degrees of freedom serving as the arm of a MEMS gripper," IEEE Transactions on Industrial Electronics, vol. 61, no. 10, pp. 5465-5471, Oct. 2014.

Conference & Proceeding Papers

[1] Jheng-Hong Gu, Wei-Chieh Lee, **Yu-Fan Chen**, Shun-Hao Yu and Jui-che Tsai, "Stepped-Tuning Optical Diaphragm Fabricated With a Lithography-Less Process," Proc. 2018 IEEE International Conference on Optical MEMS and Nanophotonics (OMN), Lausanne, Switzerland, Jul.-Aug. 2018. (poster)

[2] **Yu-Fan Chen**, Hsien-Yu Kuo, and Tyng Liu, "A novel design of a continuously variable planetary gearset (CVPG)," 2018 IEEE International Conference on Applied System Invention (ICASI), pp. 480-483, Chiba, Japan, Apr. 2018. (poster)

[3] **Yu-Fan Chen**, Hiroaki Honma, and Hiroshi Toshiyoshi, "A 3-way pushable electret-based energy harvester fabricated with 3d-printing and PDMS molding," Proc. Power MEMS 2017, Kanazawa, Japan, Nov. 2017. (poster)

[4] Yu-Hsuan Huang, Heng-Chuan Hsu, **Yu-Fan Chen**, Cheng-Ping Yang, and Tyng Liu, "Design and Modeling of a Novel 6-Speed Dual Clutch Transmission System," IEEE International Conference on Mechatronics and Automation (ICMA), pp. 141-146, Takamatsu, Japan, Aug. 2017. (poster)

[5] Yen-Hung Wang, **Yu-Fan Chen**, and Jui-che Tsai, "Tunable corner cube retroreflector (CCR) fabricated with 3D printing and origami," Proc. 2017 IEEE International Conference on Optical MEMS and Nanophotonics (OMN), pp. 1-2, New Mexico, USA, Aug. 2017. (poster)

[6] **Yu-Fan Chen**, Heng-Chuan Hsu, Cheng-Ping Yang, and Tyng Liu, "Design and Modeling of a Novel Torque Vectoring Differential System," International Conference on Mechanical, Aeronautical and Automotive Engineering (ICMAA), Vol. 108, 07004, Melaka, Malaysia, Feb. 2017. (poster)

[7] **Yu-Fan Chen**, Cheng-Ping Yang, I-Ming Chen, and Tyng Liu, "Systematic Modeling Technique by using Function Power Graph on the Centrifugal Anti-Lock Braking System Simulation," JSAE and SAE International 21st Small Engine Technology Conference (SETC), no. 2015-32-0745, Osaka, Japan, Nov. 2015. (oral)

[8] **Yu-Fan Chen**, Tyng Liu, and Ta-Chuan Liu, "On the Study of Dual Mass Flywheel with Magnetic-Type Springs for the Vibration Reduction of Powertrain Systems," JSAE Kanto International Conference of Automotive Technology for Young Engineers (ICATYE), Tokyo, Japan, Mar. 2014. (oral)

[9] **Yu-Fan Chen**, Hsu-tang Chang, Bo-jiun Chen, and Jui-che Tsai, "Surface-micromachined MEMS corner cube retro-reflector array," Proc. 2013 IEEE International Conference on Optical MEMS and Nanophotonics (OMN), pp. 105-106, Kanazawa, Japan, Aug. 2013. (poster)

[10] **Yu-Fan Chen**, Bing-jun Yang, Yi-jen Lin, Keng-hsing Chao, Chih-chieh Chang, Jia-hong Huang, and Jui-che Tsai, "Three-leaf trefoil-type MEMS tunable corner cube retro-reflector," Proc. 2011 IEEE International Conference on Optical MEMS and Nanophotonics (OMN), pp. 181-182, Istanbul, Turkey, Aug. 2011. (poster)