MAXYM (YU-CHIA) HUANG

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EDUCATION

Purdue University, B.S. Industrial Engineering **2019 — 2023**

EXPERIENCE

Application Engineer, Test Research Inc. **Feb 2025 — Present**

- Provided first line technical support and system optimization for automated X-ray inspection systems
- Trained and deployed supervised ML segmentation models for improved defect detection, improving inspection accuracy and reducing false call and escape rates by 40%
- Developed inspection recipes for various defect class, including HiP, void detection, and bridging analysis
- Engineered automation scripts for system diagnostics and troubleshooting, streamlining debug processes, improving time-to-solution by 30%
- Designed and implemented software tools for experimental design and data analysis, increasing research productivity by 20%

Technologies: Image Processing, Signal Processing, Control Systems, Microcontrollers

Product Engineer, Brobridge **Nov 2023 — Jan 2025**

- Led NPI (New Product Introduction) for the flagship product Gravity Portal
- Designed specifications and backend system architecture for intra-cluster data processing dashboard
- Conducted research and developed quality assurance test plans in collaboration - with NTUT graduate students, implementing CI pipelines with self-hosted daily runners for dockerized applications
- Produced comprehensive technical documentation for system specifications and deployment procedures
- Collaborated with cross-functional stakeholders to ensure all deliverables met defined acceptance criteria

Technologies: Kubernetes, Docker, Golang, Python, Shell Scripts, Golang

PERSONAL PROJECTS

Autonomous RC Car with Object Detection & Avoidance **Jan 2024 — Present**

- Designed and built an autonomous navigation system integrating OpenCV with ultrasonic sensors for real-time obstacle detection and avoidance
- Implemented sensor fusion architecture combining visual edge detection via OpenCV Canny algorithm with ultrasonic distance measurements to enhance navigation reliability
- Developed a C++ motion controller with PWM motor driver coordination for precise steering and speed control
- Deployed computer vision algorithms on Raspberry Pi for efficient real-time processing in embedded environments

Voice to Text Smart Home Controller **Nov 2024 — Mar 2025**

- Architected a containerized backend service for voice-to-text processing with optimized WebSocket implementation to handle streaming audio from memory-constrained devices
- Designed embedded firmware for ESP32 microcontroller integrating I2S microphone and I2C display for real-time voice capture and feedback
- Fine-tuned OpenAI Whisper model with custom training scripts to improve speech recognition accuracy for smart home commands
- Developed RESTful API endpoints for controlling smart home devices, enabling integration between hardware and backend services

Personal Website Full Stack Development **Sep 2024 — Present**

- Engineered a full-stack personal website using TypeScript and Tailwind CSS for responsive front-end design
- Implemented backend infrastructure for email automation and database management to enable dynamic content delivery
- Deployed the application to cloud infrastructure with custom domain configuration

Self Hosted Homelab **Dec 2023 — Present**

- Administered a linux server and responsible of maintaining, upgrading and hardening the system
- Self-hosted smart home applications (homeassistant) under a virtual machine deployment for various smart home controls
- Deployed a multi-functional media server on docker that supports viewing, downloading and looking up contents
- Hosted cloud share server that can be accessed anywhere
- Deployed VMs for isolated lab environments

CAPSTONE PROJECTS

Optimization of Material Movement Delivery **Jan 2023 — May 2023**

- Conducted field research, collecting transportation data and identifying high-runner materials.
- Redesigned raw material transportation schedules using Arena Simulator, optimizing layout, inventory replenishment, and job prioritization to enhance production flow by reducing idle time by 1.5 hours per week.
- Engineered layout and shelves area designs that optimized storage spaces, based on increased raw material and work in process (WIP) storage capacity by 20%.
- Introduced barcode and color labeling system for inventory management that improves efficiency and accuracy, reducing restocking and replenishing times by 5 man-hours per week.

Habitat for Humanity Consultancy **Aug 2021 — Aug 2022**

- Conducted root cause analysis using fishbone diagrams and process flowcharts to identify operational inefficiencies
- Proposed engineering solutions that improved operational profitability
- Designed and executed field studies and customer surveys, performing quantitative analysis to validate findings and recommendations
- Collaborated with project stakeholders to establish communication protocols and coordinate cross-functional implementation efforts

SKILLS

- Code: C/C++, Python, shell scripts
- Tools: Docker, SQL, Linux, Kubernetes, RTOS