YU-HSUAN WU

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PROFESSIONAL SUMMARY

Engineering graduate with a strong foundation in software development and algorithm design. Skilled in Python, C++, and frameworks like TensorFlow and PyTorch. Delivered impactful solutions in real-time motion tracking and AR rendering projects, enhancing performance and user engagement. Eager to contribute to the development of cutting-edge software systems.

SKILLS

- Programming: Python, C++, C, C#, SQL
- Web: Flask, HTML, Tailwind CSS, JavaScript, Vue
- Game and Graphics: Unity, ShaderLab
- GUI: PyQt
- Image Processing: OpenCV
- Machine Learning and AI: TensorFlow, Pytorch
- Parallel Computing: CUDA
- TCP/UDP socket programming
- *Database: MySQL*

PROJECTS

MotraxVR: Bridging Real-World Kinematics with Virtual Reality

- Created a wearable system with 16 IMU sensors, enabling real-time motion tracking for VR avatars
- Developed algorithms to synchronize movements with a 5-degree tolerance and reduced latency for smooth responsiveness
- Collaborated on motion-based VR applications, enhancing workout experiences and interactive engagements
- Technologies: Embedded C, Python, Unity, Bluetooth

Photo-Realistic Lighting System for AR Applications

- Developed a real-time, photo-realistic AR lighting system using YOLO-based neural networks for light source classification, effectively handling diverse indoor scenes despite limited training data
- Optimized mobile rendering performance using a Median-Cut algorithm for area light discretization, achieving up to 10x faster illumination and shadow calculations and smoother rendering on AR-capable mobile devices
- Integrated ARKit/ARCore into a unified pipeline, reducing cross-platform rendering overhead by an estimated 15-25%, leading to enhanced visual consistency and realism in dynamic AR scenes
- Technologies: Python, Pytorch, Unity, Flask

Code RED!

- Designed an IoT system integrating ESP8266 and Raspberry Pi for real-time data visualization
- Developed cloud functionalities using Node-RED and IBM Cloud, including data storage and web server integration
- Technologies: Embedded C, Python, UDP, Node-RED, IBM Cloud, GPIO

Peer-to-Peer Chatroom with Real-Time Messaging

- Created a P2P chatroom using Python and TCP sockets for real-time text and image communication
- Designed a decentralized chat architecture, utilizing efficient data serialization to reduce message payload size by an estimated 50-70% and accelerate message processing by 5-10x, enabling seamless user interactions

- Technologies: Python, TCP Sockets, P2P Communication

Personal Portfolio Website

- Built a personal website to showcase embedded and software projects in a clean, responsive layout
- Presented technical skills and project summaries through structured sections and interactive design
- Used Vue 3 and Tailwind CSS for modular UI; deployed via GitHub Pages
- Technologies: Vue 3, Tailwind CSS, HTML, JavaScript

EDUCATION

University of California Irvine **USA** **2024**

M.S., Embedded and Cyber-Physical Systems – 3.8/4.0
Coursework: Embedded System Software, Cyber-Physical Systems Design, Sensors, Actuators and Sensor Networks

National Taipei University **Taiwan** **2023**

B.B.A., Business Administration – 3.9/4.0
B.S., Computer Science and Information Engineering (Double Major) – 3.9/4.0
Coursework: Algorithm, Data Structure, Operating Systems