*860-709-8368 | io.paul@kato.cx | Han, Paul*

# Paul Han

Q Clearance '24-Present

## Education

**B.S. ELECTRICAL ENGINEERING & POLITICAL SCIENCE | 2020 | YALE UNIVERSITY**

## Skills

**HARDWARE DESIGN**

- OrCAD, Altium, OnShape, I2C/I3C, SPI, UART, USB, JTAG, DC/DC Converter, Embedded, x86, Bluetooth, Wi-Fi, Power, SMPS, Audio, Sensor

**SOFTWARE**

- Python, C/C++, Arduino, PIC, Embedded, SPICE (LT SPICE) Bash, Concurrency, PyTorch, Numpy, Pandas, Linux, Git, Docker, AI GPT

**TECHNICAL**

- **Skills:** Rapid Prototyping, 3D Printing, Schematic Design, PCB Layout, (6-layer, flex) Electrical Testing, Test Automation, Data Acquisition
- **Equipment:** Oscilloscope, Spectrum Analyzer, Logic Analyzer, VNA, Electronic Load, Function Generator, Curve Tracer, Hot Air Rework, SMD Oven
- **Techniques:** Professional Soldering, SMD Rework, (BGA) Test Fixture Building

## Experience

**ELECTRICAL ENGINEER | LAWERENCE LIVERMORE NATIONAL LABORATORY | 2023-PRESENT**

- Designed system level electrical tester platform as **EE for FPGA embedded sensor acquisition and streaming system**
  - Test equipment control & data collection, test orchestrator & scripting, custom PCB for test head, DC/DC converter, embedded
  - **Impact:** V&V / design platform for W87-1 JTA (accelerometer, optical, FPGA, Spacewire, distributed computing)
- Designed GUI real time multithreaded 100Mbit data acquisition program using Python Asyncio & Concurrency for Spacewire
  - 100x speed improvement: CRC lookup table, vectorized numpy operations, state machine, thread safe, custom ring buffer
  - Collaborated with data engineer on big data pipeline: Parquet (optimized) -> PostgressSQL -> Tableau
  - **Impact:** 100x increase in acquisition speed, unlocked real time communication with product as critical design tool
- Contributed delivery EIT1 of W87-1 JTA (FPGA, LVDS, Optical, Inductive, IMU, Spacewire) as **EE**
  - Custom inductance to digital gap measurement sensor development & system integration efforts
  - **Impact:** Key milestone of embedded FPGA based environmental sensor system

**ELECTRICAL ENGINEER, COMPUTE HARDWARE DESIGN (INFRASTRUCTURE) | META | 2020 – 2023**

- Brought world-class ML inference ASIC server platform to market as **Electrical Engineer**
  - **Responsibilities:** *Test Plan Creation/Oversight/Review, Test Fixture/Lab Setup, Component Selection, Electrical Design Refinement, Program Management, Hardware/Firmware (POC, EVT, DVT, PVT, MP) Bring up & Debug in Lab, Offshore Test/Debug/Design Execution*
  - **Technologies:** *x86 Server, OOB Management, USB, Low Speed Protocols, CPLD, Firmware Management, Linux Shell Scripting & OS Debug, (CentOS/Ubuntu) Low Speed Analog/Digital Design, x86 Power Sequence Debug, SMPS, JTAG, ASIC Bring-up*
- Improved NPI engineering efficiency:
  - Directed OCP Debug Console development as **Project Lead**
    - **Impact:** *Unlocked OOB Debug for servers with bricked NIC during critical in-house NIC NPI, eliminating physical intervention during COVID*
  - Released first complete specification of proprietary Meta debug interface as **Lead Writer**
    - **Impact:** *Improved debug functionality and cross-platform compatibility across all org products, created debug ecosystem*
  - Introduced new automation framework to server electrical testing, enabling scalable and streamlined testing

**ELECTRICAL ENGINEERING INTERN | META | SUMMER 2019**

- Wrote software of first-of-kind behavioral circuit simulator in Python for schematic debug, eliminating costly manual verification
  - **Technologies:** *Python, Finite State Machine, Python, Graphs, Sub-circuit Identifier, OrCAD*
- Designed software & hardware for first-of-kind test verification & debug automation platform for Meta servers
  **Technologies:** *Python, Jupyter Notebook, OrCAD, rapid prototyping*

**ELECTRICAL ENGINEERING INTERN | INTUITIVE SURGICAL | SUMMER 2018**

- Developed embedded PIC system which serialized numerous sensors into a single data stream
  **Technologies:** *Time of Flight, (TOF) Inductance to Digital, (LDC) Python, Serial, I2C, PIC, C/C++*
- Designed two PCAs for next generation DaVinci Surgical System

**RESEARCHER | YALE PHYSICS DEPARTMENT, WRIGHT LABORATORY | SUMMER 2017**

- Designed microcontroller and FPGA based solutions for muon/cosmic ray detection using commercial CMOS and CCD sensors

**RESEARCHER | UCONN ADVANCED POWER ELECTRONICS AND DRIVES LAB | 2013 - 2016**

- Researched and developed a capacitively coupled wireless charging solution for smartphones (GaN MOSFET H-Bridge)
- Researched high efficiency AC induction motor technology

## Extracurricular Activities

**PROJECTS: PAULSIDE.COM HIGH VOLTAGE, RF, WIRELESS CHARGING, BASEMENT SERVER, 3D PRINTING CIRCUITS, ML LANGUAGE TRANSLATION, ML MRI BRAIN SEGMENTATION FOR 3D PRINTING**

## Publications

**IEEE – 2017 APPLIED POWER ELECTRONICS CONFERENCE AND EXPOSITION (APEC)**

- (Co-author) Evaluation of H-bridge and half-bridge resonant converters in capacitive-coupled wireless charging, 2017

**IEEE - 17TH EUROPEAN CONFERENCE ON POWER ELECTRONICS AND APPLICATIONS (EPE)**

- (Co-author) A Comparison of Rotor Bar Material of Squirrel-cage Induction Machines for Efficiency Enhancement, 2015