SUWEI YANG (Software/Firmware engineer)

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Education

- **University of Utah** — Salt lake city, UT
  Master of Science in Computer Science — *Jan. 2023 – Dec. 2024*
- **National Taiwan University of Science and Technology** — Taipei, Taiwan
  Master of Science in Electrical Engineering — *Sep. 2017 – Mar. 2020*
- **National Taiwan University of Science and Technology** — Taipei, Taiwan
  Bachelor of Science in Electrical Engineering — *Sep. 2013 – Mar. 2017*

Experience

- **University of Utah** — Salt lake city, UT
  Graduate Research — *Aug 2023 - present*
  - **Deep learning**: Using Fractional Fourier transform(FRFT) to solve partial differential equations(PDEs). Deep learning plays a filter role here.
  - **Verificaiton**: Build nonstationary Gaussian random field to prove FRFT better than regular FT
  - **Preliminary Result**: In nonstationary cases, FRFT performances at least 10 percent better than FFT in 1D/2D/3D datasets
  - **Tools**: Python, Pytorch, Numpy, Deep learning, Probabilistic machine learning, Debug, Paper reading
- **University of Utah** — Salt lake city, UT
  Teaching Assistant — *Jan 2024 - Apr 2024*
  - **Probabilistic machine learning**: Release, grade assignments and office hours
- **Silicon motion** — Hsinchu, Taiwan
  Firmware Engineer — *May 2020 - Nov 2022*
  - **Kingston NV2 (PCIE)**: Program and erase fails verification. Read, Raid, and Debug flow presentation.
  - **IC SM2259XT3 verification**: RAID, MPISP (boot code) implementation and verification on FPGA.
  - **Crucial BX500 (SATA)**: Turbo RAID implementation and verification (rescue retention data up to 6 planes). RDT maintenance and development (verify NAND quality).
  - **Tools**: C, UART, JTAG, Logic analyzer, RTOS

Projects

- **Partial differential equation(PDE)**: Apply FRFT to solve PDE. From the preliminary result, FRFT is at least 10 percent better than regular FFT.
  Tools: Python, Pytorch, Numpy, Deep learning, Probabilistic machine learning
- **Pipe in xv6**: Improve pipe read and write throughput from 0.04MB/s to 14.49MB/s by directly mapping user memory space to kernel space.
- **Network driver in xv6**: Improve driver response time from 19 to 8 ticks (improvement depends on loading) by mapping user memory space to kernel space.
  Tools: C, GDB, Intel E1000 spec, VScode(for code reading)
- **Earthquakes prediction**: Build different probability models to predict earthquakes. Improve MSE from 9.24 (linear model) to 2.74 (Dirichlet model).
  Tools: Python, Probabilistic machine learning, Numpy, Pandas, Scipy
- **Natural language processing**: Under construction...

Programming Skills

- **Languages**: C(3-4years), Python(1-2 years), C++(1-2 years)
- **Tools**: GDB, UART, Logic analyzer, JTAG, Operating system, VScode(for Python), Probabilistic machine learning, Deep learning

Courses

- **Courses**: Nature Language Processing, Artificial Intelligence, Advanced Operating System, Operating System, Computer Architecture, Software Verification, Probabilistic Machine Learning, Independent Studying