Bao Nguyen

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Electrical Engineer with experience in PCB design, embedded system development, and signal integrity analysis.

Work Experience

TE Connectivity   Wilsonville, OR
R&D and Product Development Engineer   Jun 2021 - Present
- Developed custom automation stations for fine-wire soldering, achieving a 70% reduction in soldering time. Responsibilities included schematic capture and layout in Altium, firmware development in C++, and post-implementation technical support on the manufacturing floor. Designs featured power stages, isolation, SPI sensors, voice coils, uSD storage, and I2C OLED screens, resulting in the successful deployment of over 7 units across three product lines in the US and Mexico.
- Designed and led the development of a 32-channel, 9K-3GHz RF switch matrix for Vector Network Analyzer (VNA) applications, automating cable bundle testing. Conducted schematic capture and a 10-layer stack-up layout in Altium, performed signal integrity simulations in SIwave, and developed a Python-based software GUI. Collaborated with layout, mechanical, and signal integrity engineers and guided interns. Currently undergoing RF performance evaluations.
- Developed and simulated a 12GHz, 32-channel adapter board for PCIe Gen 3 equalization and crosstalk performance analysis. Conducted cable evaluations using a VNA, high-speed oscilloscope, and function generator, and provided customers with detailed heat maps and EYE diagrams, resulting in further funding for development.
- Designed and deployed a low-field magnetic automatic test system for 3D magnetic measurements on medical connectors. Utilized tunnel magnetoresistance and fluxgate sensors, amplifiers, and a 3D gantry for precise movement. Created custom probes and Python-based test scripts, resulting in an internal tool for all magnetic shielding evaluations in medical applications. Developed an IEEE standard procedure for submission.
- Executed system-level design and schematic entry for MIPI and analog endoscope cameras, ensuring power and signal integrity over extended distances. Conducted root cause analysis on unstable data streams over long transmission distances, implementing solutions to stabilize performance. Delivered functional prototypes for customer demonstrations at sales meetings and trade shows.

Analog Devices   Grass Valley, CA
Test Engineering Intern   Mar 2021 – Jun 2021
- Develop 10 layers PCB multi-site test carrier PCB for server power converter ICs using Allegro PCB. Fabricated for evaluation.
- Successfully troubleshoot and fix two assembled multi-site analog test fixtures that avoid 4 weeks of re-manufacturing during Covid long lead-time

OpenSensing Lab | Link #1 | Link #2   Corvallis, OR
Project Manager & Lead Electrical Engineer   Jan 2019 - May 2021
- Managed a team of eight students across Computer Science, Mechanical Engineering, and Environmental Engineering disciplines. Secured over $50,000 in funding from the EPA and NOAA for the eDNA project, delivering six final prototype units to OSU, EPA, and NOAA.
- Designed, built, and stress-tested the entire mechanical system for the initial version of the eDNA sampler, utilizing Fusion 360, FDM 3D printing, and off-the-shelf components.
- Developed PCBs for the eDNA project featuring wireless communication, microcontrollers, power switches, and sensors, achieving incremental improvements over a two-year period.
- Developed and published the Hypnos board, an open-source, low-cost power switch board for remote sensing applications. This project has been cited in over eight publications, with more than 200 units fabricated to date.

Education

Oregon State University   Corvallis, OR
Bachelor of Science in Electrical and Computer Engineering: GPA 3.98/4.0

Projects

USB-C Bench Power Supply | KiCad   Sep 2023 – June 2024
- Design protocol handler for USB-C PD PPS with encoder/button as user input. "No inductor" power supply.
- System utilize RP2040, AP33772, INA219 current sensor, OLED screen, and rotary encoder

High Density CAN Sensor Interface | MPLAB X IPE, Eagle PCB   Mar 2021 – May 2021
- Design 16 channels ADC hub that transmit data over CAN for general acquisition. 4 units are placed on OSU 2021 GFR eCar.
- System utilize dsPIC33, AD4114 Delta-Sigma ADC, and RC low pass filter for each analog input

Technical Skills

Languages: Python, C/C++
Software/Simulator: SIwave, LTspice, Altium Designer, KiCad, Eagle PCB, Fusion 360