Daniel Boe

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Work Experience

Analytical Mechanical Engineer **Global Health Labs, Bellevue, WA**
July 2020 – Present

- Developed in-house automation for third-party quality control testing, leveraging custom software solutions to achieve $1M in annual cost savings
- Streamlined product development testing by designing an end-to-end MQTT- and PLC-based data acquisition system with real-time monitoring in Grafana, doubling test throughput
- Led data analysis for multinational team investigating non-compliance by building an ETL pipeline and delivering weekly updates to stakeholders, enabling root cause confirmation and 10% reduction in off quality
- Managed build of an industrial thermal-vacuum process control system, authoring BoM, P&ID, and wiring schematics while collaborating with fabrication shop to design custom components, successfully integrating next-generation controllers to ensure long-term availability and support
- Identified gaps in manufacturing traceability and wrote a custom shop traveler Flask app that streamlined production report creation from one month to real-time
- Applied Kaizen principles on manufacturing line by developing custom SCADA software, analyzing data to identify root causes of 3 non-conformities, and implementing corrective action through process adjustment and HMI redesign

Skills

- **Languages**: Python, SQL, Ladder Logic, C, MATLAB, JavaScript
- **Technologies**: Polars, Grafana, InfluxDB, MQTT, FastAPI, Flask

Projects

Home Environment Monitoring github.com/daniel-boe/iot-server

- Built a FastAPI application on Raspberry Pi to receive, queue, and distribute data to multiple remote databases and consumers, enabling scalable and reliable home environment monitoring
- Deployed a network of WiFi-enabled microcontrollers to capture and stream real-time temperature and humidity data to central server, ensuring modularity for future expansion

Education

Master of Science in Mechanical Engineering **South Dakota School of Mines and Technology**
Graduated: July 2021 GPA: 4.0/4.0

- Thesis: "A Positivity Preserving High Order Finite Difference Scheme for Compressible Two Fluid Flows"

Bachelor of Science in Mechanical Engineering **South Dakota School of Mines and Technology**
Graduated: May 2019 GPA: 4.0/4.0

Publications

- "A positivity preserving high-order finite difference method for compressible two-fluid flows" *Numerical Methods for Partial Differential Equations*, Volume 39, Issue 6, November 2023.