

Lux Zhang

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EXPERIENCE

Software Engineer

Jan 2025 – Current

BlackSea Technologies

Baltimore, MD

- Architected and implemented multithreaded integration gateway connecting autonomous vessel control systems to third-party AI navigation platforms, enabling long-range autonomous operations through concurrent message translation across multiple protocols (DDS, NNG, Protobuf).
- Migrated critical real-time communications layer from legacy protocol to Protobuf, improving maintainability and extensibility across production fleet of 300+ vessels.
- Integrated a line-of-sight multi-vessel control system and developed accompanying safety-critical logic including E-Stop handling and control authority arbitration, enabling single operators to manage multiple autonomous vessels.

Junior Software Engineer

Jan 2023 – Jan 2025

BlackSea Technologies

Baltimore, MD

- Performed high-risk migration of a 50,000-line C embedded software codebase between proprietary real-time operating system (RTOS) electronic control units, maintaining continuous operation and full functionality of vessel control systems.
- Spearheaded migration of Data Distribution Service (DDS) frameworks for internal communications, introducing modern, memory-safe programming practices and updating build environments from GNU Automake to CMake to align with industry standards.
- Designed and implemented mission-critical features while meeting evolving specifications and customer demands.

Full Stack Web Dev Intern

June 2022 – Aug. 2022

Farpoint Learning

Columbia, MD

- Developed a full-stack web application using MUI (Material UI), Next.js, React, MongoDB and Docker Compose for customer retention and user portal.
- Deployed backend on AWS EC2, configured DNS and domain name, and performed SEO to optimize core web vitals.

Data Analyst Intern

May 2020 – Aug. 2020

Federal Motor Carrier Safety Administration

Baltimore, MD

- Identified and analyzed highest-risk road segments for large vehicle traffic in 23 Maryland counties and Baltimore City using ArcGIS, Python, ArcPy, and R.
- Developed and automated detailed visual reports to guide state-wide allocation of safety resources for the chief safety officer, regional field administrator, and data analyst team.
- Extracted and processed data (ETL) from state crash datasets in CSV and Excel (.xls) format using pandas and NumPy.

Data Science Intern

May 2019 – Aug. 2019

Laureate Education

Baltimore, MD

- Modernized a legacy dataset of 8 years of customer enrollment information in Oracle Database into Microsoft SQL Server by aggregating, transforming, and cleaning data with SQL, Python, pandas, NumPy, Anaconda, and Jupyter Notebook.
- Delivered seminar on introductory Python data analysis and machine learning (ML) techniques to a team of 20+ predominantly R and SAS professionals.

EDUCATION

Cornell University

Ithaca, NY

Bachelor of Science in Computer Science, Minor in English; GPA: 3.5

Aug. 2018 – May 2022

TECHNICAL SKILLS

Programming Languages: C++, C, Python, TypeScript, JavaScript, HTML, CSS, SQL

Tools & Platforms: Git, Docker, Docker Compose, VS Code, CMake, Jupyter Notebook, Linux, GitLab, SharePoint

Embedded Systems & Protocols: CAN bus, RTOS, J1939, NMEA 2000, Protobuf, DDS

Web Development: React, Node.js, Next.js, MUI v5, TailwindCSS, MongoDB, PostgreSQL, Vite