Ryan Allyn Waldheim

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Summary

Full-stack engineer with 3+ years building scientific data platforms and laboratory management systems for battery research environments. Skilled in Python, React, and TypeScript for developing laboratory automation tools and research data analysis systems. Collaborated with scientists and engineers to transform complex research requirements into intuitive scientific computing solutions.

Experience

Chemix | Sunnyvale, CA **January 2022 – March 2025**

Senior Research Engineer

- Built a scalable laboratory data visualization platform from scratch using Next.js, React, and TypeScript to display AI-powered battery testing predictions for research scientists and laboratory teams.
- Established automated deployment pipelines for laboratory software using GitHub Actions, reducing scientific application deployment time by 83% from 30 minutes to 5 minutes, enabling faster research iteration cycles.
- Collaborated with laboratory scientists, hardware engineers, and research teams to translate complex scientific requirements into intuitive laboratory management interfaces for battery testing applications.
- Developed a laboratory protocol automation tool that reduced battery testing protocol generation time by 95% from 30 minutes to seconds, significantly accelerating scientific research throughput and experimental workflows.
- Implemented REST API integrations for laboratory instrument communication and scientific data exchange between research platforms and laboratory information management systems.

Birla Carbon, Aditya Birla Group | Marietta, GA **May 2019 – January 2022**

Senior Research Associate

- Built and maintained a SQL-based laboratory information management system (LIMS), reducing sample data preparation time from 4 hours to 15 minutes for over 200 weekly laboratory samples.
- Led laboratory workflow automation and process optimization initiatives that accelerated three research products from laboratory development to market-ready within 18 months through systematic data analysis.

Projects

MIX™ | Product Manager and Lead Developer | Chemix **June 2023 – Present**

data analysis platform for battery engineers/scientists

- Automated complex laboratory data analysis workflows that reduced scientific analysis time by 85%, enabling research scientists to process more experimental data using Python scientific computing libraries and Plotly Dash framework.
- Collaborated extensively with laboratory researchers and data scientists to translate complex scientific computing requirements into intuitive laboratory workflow interfaces for research teams.
- Streamlined laboratory data workflows and implemented scientific visualization techniques to process 5TB of experimental data weekly, reducing laboratory analysis time from days to minutes (98% improvement) and enabling real-time research insights for scientific teams.

EcDPT | Lead Developer | Birla Carbon **August 2019 - January 2022**

platform for analyzing and visualizing battery performance metrics

- Developed an R Shiny-based laboratory analysis tool utilized by research scientists daily for statistical analysis, improving scientific data accessibility and reducing laboratory analytical workflow time.
- Processed terabytes of laboratory experimental data monthly through automated scientific data

pipelines, reducing laboratory data import times by 75% and improving research data retrieval speeds by 90%.
- Integrated laboratory data workflows with scientific analysis tools including OriginPro and Minitab for advanced statistical analysis and research visualization in laboratory environments.

Education

B.S. Chemical and Biomolecular Engineering | Georgia Institute of Technology **August 2016 – May 2019**
Professional Certificate of Data Science | IBM **August 2020**

Skills

Scientific Computing & Laboratory Systems: Laboratory Information Management Systems (LIMS), Scientific Data Analysis, Research Workflow Automation, Laboratory Instrument Integration, Statistical Analysis
Frontend Development: Next.js, React, TypeScript, JavaScript, Tailwind CSS, Scientific Data Visualization, Laboratory Interface Design
Backend Development: Flask, Django, FastAPI, Python, REST API, Redis, PostgreSQL, MySQL
Data Engineering: Dagster, Prefect, SQL, pandas, numPy, R Shiny, Plotly Dash, Data ETL Pipelines
DevOps: GitHub Actions, Sentry, CI/CD, Docker, AWS, GCP