

Annabelle K. Joy

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Education

University of Houston, Cullen College of Engineering
M.S. Engineering Data Science

May 2025

Louisiana State University
B.S. Computer Science, Software Engineering Concentration; Minor in Analytics

December 2022

Coursework: Engineering Statistics | Database Management | Data Structures & Algorithms | Machine Learning | Deep Learning | Data Mining | Advanced Artificial Neural Networks | Advanced Linear Optimization

Work Experience

Operations Analyst Intern

iCodeEDU | Remote | August 2024 – April 2025

- Analyzed dropout patterns across 75+ students using SQL and Python to develop targeted retention strategies that **reduced churn by 23%**
- Built and deployed performance analytics dashboard in Tableau that streamlined resource allocation and **increased operational efficiency by 18%**
- Automated monthly reporting pipeline using Python scripts and cron jobs, **reducing manual effort by 35 hours per month**

Web Developer

Positive Masculinity | Remote | July 2023 – April 2024

- Redesigned e-commerce architecture using React.js, **eliminated 5-second page load delays**
- Resolved 95% of critical support tickets within 2-hour SLA using Zendesk ticketing system
- Established automated testing framework using Jest and Cypress that **reduced deployment bugs by 60%**
- Partnered directly with clients through Figma mockups to capture requirements and execute QA protocols using Selenium

Research Assistant

Southern University and A&M College | Baton Rouge, LA | August 2022 – July 2023

- Built **PySpark data pipelines** that processed real-time IoT sensor data from 200+ agricultural sensors across 50 field sites
- Conducted advanced statistical analysis using R on soil-crop relationships and generated insights that **improved forecasting accuracy by 17%**
- Deployed **predictive maintenance system** using isolation forests and MongoDB, **decreasing unexpected sensor failures by 40%**
- Designed and launched a Flutter mobile application for real-time data visualization and reporting

Special Projects

Real-Time Stock Market Data Pipeline | Apache Kafka, Cassandra, Python

- Engineered and deployed real-time stock market data pipeline leveraging Apache Kafka for streaming and Cassandra for scalable, fault-tolerant storage. Processed high-frequency financial transactions through low-latency event-driven architecture, optimizing query performance for rapid market insights and decision-making

MISO Grid Forecasting Platform | Python, Prophet, Statistical Modeling

- Developed time series forecasting models analyzing 50,000+ hours of grid data. Optimized ARIMA parameters through ACF/PACF analysis. Uncovered load pattern variations by hour-of-day and day-of-week. Implemented comprehensive model evaluation using industry-standard metrics (MSE, RMSE, MAE, and MAPE).

Biomedical Signal Processing Pipeline | R, Signal Processing, Statistical Analysis

- Developed advanced signal cleaning pipeline for lower limb, EMG, and EEG data. Implemented Butterworth filters and ICA decomposition on 64-channel datasets. Validated processing effectiveness through Bland-Altman plots and power spectral density analysis, demonstrating quantifiable improvements in bio signal quality and physiological interpretation for research applications.

Technical Skills

Programming & Analytics: Python, R, Java, C, SAS Statistical Modeling, Machine Learning, Time Series Forecasting

Data Engineering: Apache Kafka, Pyspark, MongoDB, NoSQL, ETL Processes

Database Management Tools: SQL Server, MySQL, PostgreSQL, Cassandra

Visualization & BI: Tableau, Power BI, Flutter, Dashboard Development

Development Tools: Git, Jira, Agile/SCRUM, Jest, Cypress, Selenium, Figma

Cloud & DevOps: Automated Deployment, Cron Jobs, Performance Optimization