GONZALO LOAYZA

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SUMMARY

Senior Computer Science student at BYU specializing in Machine Learning and Predictive Analytics. Experienced working with large-scale time-series, simulation, and operational datasets, applying Python, statistics, and ML workflows to support data-driven engineering and decision-making problems. Strong foundation in algorithms, systems, and data-centric development.

EDUCATION

Brigham Young University (BYU) — Provo, UT

B.S. in Computer Science — Machine Learning Emphasis

Expected Graduation: December 2026

Relevant Coursework: Machine Learning, Deep Learning, Data Science Capstone, Algorithms, Data Structures, Computer Systems, Probability & Statistics

Honors Thesis: Unsupervised mode discovery in mineral-processing circuits (in progress).

GPA: Omitted by choice (available upon request)

TECHNICAL SKILLS

Machine Learning & Data: anomaly detection, time-series analysis, feature engineering, Exploratory Data Analysis (EDA), model evaluation, data pipelines, large data wrangling, time-series forecasting (basic), scikit-learn, Pandas, NumPy

Programming: Python, C++, Structured Query Language (SQL), JavaScript

Tools: Git, Linux, Jupyter Notebook, Power BI, AWS/Azure (basic)

EXPERIENCE

Maintenance Data Analyst Intern — Compañía de Minas Buenaventura (Mining: San Gabriel Unit), Moquegua, Peru | Jun 2025 – Aug 2025

- Processed and cleaned 50k+ high-noise sensor time-series, reducing variance through smoothing, outlier capping, and signal reconstruction.
- Performed EDA on crushing and grinding systems, identifying wear patterns and ore-type correlations to support early-warning indicators.
- Engineered 15+ reliability features (temperature deltas, load ratios, transient-spike metrics) for condition-based maintenance analysis.
- Structured 100+ assets under ISO 14224/17359, improving reliability-data traceability and supporting maintenance and monitoring workflows.

Data Analytics Intern — Hatch Ltd (Urban Solutions Sector), Vermont, USA | May 2024 – Aug 2024

- Processed and analyzed 200k+ TrainOps simulation records to evaluate delays, network performance, and operational bottlenecks across multiple scenarios.
- Built Python and C++ automation scripts that reduced simulation-output processing time by ~70%, eliminating manual parsing for large datasets.
- Integrated rider-survey responses with onboard sensor signals to identify demand patterns and validate service-level models.
- Applied statistical and optimization methods to compare transit scenarios, improving clarity and decision-support for planning teams.

PROJECTS

Honors Thesis – Unsupervised Mode Discovery in Mineral Processing (In Progress)

Python / ML — BYU Honors Program (2025–2026)

- Designing an unsupervised-learning framework to identify operational modes in mineral-processing circuits.
- Applying clustering, dimensionality reduction, and statistical validation using plant datasets.
- Goal: support performance monitoring and early detection of suboptimal operating states.

Predictive Maintenance – Sensor Data Conditioning & Feature Engineering

Python / Industrial Time-Series — Buenaventura (2025)

- Built a reproducible preprocessing workflow for 50k+ industrial sensor time-series, implementing smoothing, outlier capping, and signal reconstruction.
- Designed reliability-focused feature sets (load ratios, deltas, transient-spike metrics) prepared for downstream predictive-maintenance prototyping.

- Delivered structured datasets enabling future ML experimentation for failure-prediction tasks.

TrainOps Simulation Data Optimization

C++ / Python — Hatch (2024)

- Developed automated parsers to transform 200k+ TrainOps simulation records into clean, analysis-ready datasets.
- Implemented workflow automation reducing processing time by ~70% vs. manual parsing.
- Cross-validated simulation results using rider-survey data and onboard sensor logs to improve scenario fidelity.

Predictive Maintenance Modeling Prototype (Academic)

Python / ML — BYU (2024–2025)

- Created an ML pipeline inspired by industrial conditions, including EDA, noise reduction, feature engineering, and exploratory time-series labeling.
- Benchmarked baseline classifiers (Random Forest, SVM, Gradient Boosting) to analyze early detection of abnormal equipment behavior.
- Used as a foundation for the real predictive-maintenance work performed later at Buenaventura.

AWARDS

Donald Goodyear Doll Sr. Scholarship • Dr. Gerald Hatch Scholarship • BYU Honors Program

LEADERSHIP

Emergency Response & Rescue Program — Peruvian Army: Leadership training in high-pressure environments, focused on coordination, rapid decision-making, and operational execution.

LANGUAGES & CERTIFICATIONS

Languages: English (Fluent), Spanish (Native), French (Intermediate)
Certifications: MITx 6.00.1x • Harvard CS50x • IoT Programming (UCI/Coursera)