

Abi Strait

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Relevant Work Experience

Utilities Engineering Intern - Englewood, CO

May 2024 - Aug 2024

- Collected and validated dam height data from piezometers using Excel, protecting 35K residents from overflow risk
- Analyzed ozone dosage data in Excel, improving water quality by reducing manganese by 24.5%, TOC by 11%, and hardness by 7.2%
- Audited 2023 water system in AWWA software, improving data accuracy by 2%; authored a standard operating procedure (SOP) now adopted citywide
- Mapped 7 high-risk sewer lines in ArcGIS Pro using spatial datasets to model flow risks for 2025 Master Plan

Projects

Random Forest ML Model (Classification)

Jul 2025 - Sep 2025

- Built and evaluated Decision Tree + Random Forest classifiers in Python (Jupyter/Colab), using train/test splits and confusion-matrix + precision/recall/F1 to optimize for recall based on defined error costs (FN vs FP)
- Tuned model complexity and summarized drivers with feature importance derived from plots

K-Means Clustering (Unsupervised)

Jul 2025 - Sep 2025

- Performed EDA/cleaning and implemented K-Means clustering in Python, selecting k via elbow + silhouette, and validating separability with a PCA visualization
- Translated clusters into interpretable personas and recommendations; documented assumptions/limitations and next experiments (e.g., stability checks, alternative clustering)

Easy-Bake Oven Closed-Loop Control

Nov 2025 - Dec 2025

- Modeled heat loss with a multi-layer thermal resistance approach to hit 350°F under a 55W/12V constraint and performed calculations in MATLAB
- Instrumented the prototype with a thermocouple and collected data via NI DAQ connected to a LabVIEW algorithm
- Implemented PWM + MOSFET switching and tuned a PID controller in LabVIEW; validated predicted vs measured steady-state behavior and delivered full test documentation/diagrams

CERTIFICATIONS AND AWARDS

DS and ML: Making Data-Driven Decisions

MIT – IDSS, Oct 2025

CSWA (Oct 2024); CSWP Segment 2 (May 2025)

Dassault Systèmes

Colorado Seal of Biliteracy

State of Colorado, Nov 2023

Education

Mechanical Engineering (Bachelor of Science) at **Colorado School of Mines**

Expected May 2027

GPA: 3.9/4.0; Creative Director of Teacher Education Alliance; Trade and Technical Scholarship