

CURRICULUM VITAE
DREW M. GJERSTAD

DoD Secret Clearance

Minneapolis, MN

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EDUCATION

University of Minnesota

Bachelor of Science in Data Science, Minor in Mathematics

2022–2026

Minneapolis, MN

Honors Thesis: Combinatorial Bayesian Optimization driven by Deep Generative Models

PhD applications in progress; decision expected early Spring 2026.

Anoka-Ramsey Community College

Associate of Arts in Liberal Arts and Sciences

2020–2022

Coon Rapids, MN

RESEARCH EXPERIENCE

University of Minnesota, Department of Computer Science & Engineering

Undergraduate Researcher (Supervisor: Professor Aryan Deshwal)

November 2024–

Minneapolis, MN

- *Research Focus:* Sequential decision-making under uncertainty using Bayesian optimization and reinforcement learning to accelerate scientific discovery and engineering design in high-dimensional and mixed-variable (discrete, combinatorial) settings.
- *Current Project:* Sample-efficient materials design via Bayesian optimization to adaptively guide deep generative models to accelerate materials discovery. The initial approach used local latent space Bayesian optimization (LOL-B0) to guide a VAE model, and the current approach is focused on fine-tuning diffusion models pre-trained on materials datasets.
- Designing Bayesian optimization loops in BoTorch (Python) for high-dimensional, combinatorial objectives.
- Developing Gaussian Process models in GPyTorch (Python) for modeling black-box objective functions.

Naval Surface Warfare Center, Carderock Division

Naval Research Enterprise Internship Program (NREIP)

May 2024–August 2024

Bethesda, MD

- Conducted a facility characterization test to validate the capabilities of a variable-pressure water tunnel.
- Performed a systematic review of the water tunnel's standard operating procedures, hardware, and software.
- Developed a real-time and post-processing analysis tool and UI in MATLAB for facility characterization tests, including time series and signal analysis components.
- Prototyped data inference methods in Python and MATLAB for integration with an Oracle APEX database.

PROFESSIONAL EXPERIENCE

Optum

Data Scientist Intern

June 2023–August 2023

Minneapolis, MN

- Modeled business data in Tableau to identify areas to reduce issue turnaround time and issue volume.
- Built interactive dashboards in Tableau including an overview of business integrations, root cause analysis, and statistical process control charts.
- Automated data governance processes in Python to verify proposed data models follow conventions defined in a comprehensive data model.
- Developed an automated data quality assurance workflow in Python to validate Snowflake data lakes.

TEACHING EXPERIENCE

University of Minnesota, Department of Computer Science & Engineering **September 2025–**
Undergraduate Teaching Assistant (CSCI 5541: Natural Language Processing) *Minneapolis, MN*

- Delivering recitations on tools for prototyping, developing, and managing machine and deep learning code.
- Holding office hours to provide students with accessible support for lecture topic and coursework questions.
- Performing grading and reviewal tasks to provide timely, actionable feedback to students.

PROJECTS

Sample-efficient Materials Design via Bayesian Optimization **September 2025–**
Link: [\(not publicly available yet\)](#)

- In this project, we focus on efficiently exploring the design space of materials in order to optimize multiple properties while attaining material stability/validity.
- We are focusing on developing methods to guide a deep generative model (i.e., VAE or diffusion model) with high-dimensional Bayesian optimization.

Bayesian Optimization Repository **July 2025–**
Link: github.com/drewgjerstad/bayesian-optimization

- The focus of this project is the curation of notes, tutorials, examples, and from-scratch implementations of Bayesian optimization, its applications, and related topics.
- Topics include decision theory, Gaussian processes, utility functions, and acquisition functions.
- Examples include BoTorch tutorials and an introduction to using GPyTorch and GAUCHE for applying Gaussian processes to irregular-structured input representations (i.e., molecular, graph, etc.).
- The repository is updated semi-regularly, dependent on topics relevant to other research projects.

Optimizing Circuit Gate Sizes via Bayesian Optimization **November 2024–**

- The focus of this project is using Bayesian optimization to optimize chip design (gate sizing) choices in a high-dimensional, discrete, and combinatorial search space.
- Surrogate models (Gaussian processes) using categorical kernels, graph kernels, and string kernels were developed and evaluated. Moving forward, deep generative models will be examined for such use.
- Several optimization approaches have been explored including trust region and latent space approaches.

AWARDS & HONORS

- Dean's List, College of Science and Engineering, University of Minnesota (2023–2025)
- Dean's List, College of Liberal Arts, University of Minnesota (2023–2025)
- Iron Range Scholarship, University of Minnesota (2022–2026)

PROFESSIONAL MEMBERSHIPS

Association for Computing Machinery (ACM) **September 2025–**
Student Member (University of Minnesota)

Institute for Electrical and Electronics Engineers (IEEE) **September 2025–**
Student Member (University of Minnesota)

LANGUAGES & TOOLS

Languages: Python, MATLAB, R, Julia, C++, SQL, L^AT_EX

Libraries: Matplotlib, Pandas, Scikit-Learn, TensorFlow, PyTorch, GPyTorch, BoTorch, JuMP

Tools: Git, GitHub, Weights & Biases, Docker, Tableau, Snowflake, PostgreSQL, Microsoft Excel