Bradley Peterson

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SUMMARY

Computer Science graduate student with software development and data analysis experience and a portfolio in ML, simulation, and LLM-based research projects.

EDUCATION

Bachelor of Science in Computer Science **May 2024**
Arizona State University, Tempe, AZ *GPA: 3.63*
Relevant Coursework: Applied Linear Algebra, Introduction to Artificial Intelligence, Data Structures and Algorithms, Database Management, Found. of Machine Learning, Engineering Probability and Statistics, Multimedia Info. Systems

Master of Science in Computer Science (In Progress) **December 2025**
Arizona State University, Tempe, AZ *GPA: 3.56*
Relevant Coursework: Statistical Machine Learning, Planning/Learning in AI, Natural Language Processing, Data Mining

PROFESSIONAL EXPERIENCE

Data Science Intern | Nikola Corporation | Phoenix, AZ **June 2024 – December 2024**

- Analyzed a massive set of live, time-series fleet data to detect anomalies and ensure product safety.
- Personally developed efficient algorithms to estimate fuel consumption, handle noisy data with Polars, NumPy.

PROJECT EXPERIENCE

Toxic Sentiment Mitigation Research **August 2023 – Present**

- Fine-tuned 5 large language models (LLMs) via progressive distillation to detect and mitigate toxic sentiment in scientific paper reviews, in collaboration with 4 students and researchers from Mayo Clinic and ASU.
- Developed an automated annotation technique to efficiently build a value-aligned dataset for our models.
- Implemented BERT-based feature extraction and Random Forest classification to categorize sentences into 9 semantic classes and accelerate data collection. Visually verified success via PCA and k-means clustering.

Light Pollution Research & ML Data Analysis **November 2021 - Present**

- Fused astrophotography and comprehensive image data analysis of 8,900+ sky-brightness samples to research the spatiotemporal character of artificial light across central AZ.
- Extracting key trends and features from highly multidimensional data, employed machine learning techniques such as DBSCAN, random forests, and neural-net classification with Keras to generate insights.
- Presented actionable findings to city councils, directly influencing city lighting objectives.

Optimized Radiance Modeling Project **December 2023 - January 2024**

- Developed a Python-based geospatial analysis tool to simulate the radiant impacts of a complex road network, applying techniques such as raster data manipulation, NumPy vectorization, and efficient memory management.
- Optimized performance to achieve over a 99% reduction in runtime, utilizing techniques such as Voronoi density weighted sampling, lookup trees, and parallel processing, significantly improving the simulation's scalability.

ADDITIONAL EXPERIENCE

Data Validator | OFW | Phoenix, AZ **June 2023 - November 2023**

- Connected technical and non-technical teams, simplifying complex ideas and exploring workflow automation.

Delegate - East Valley (Volunteer) | DarkSky International **August 2020 - Present**

- Present regularly on dark-sky topics to a variety of audiences: conferences, clubs, and city councils.

TECHNICAL SKILLS

- **Programming**: Python, JavaScript, Java, C++, SQL, HTML
- **ML/Data**: PyTorch, TensorFlow, scikit-learn, Keras, DBSCAN, LLMs, NLP, Pandas, NumPy
- **Tools, Databases, OS**: Git, GitHub, PostgreSQL, Windows, MacOS, Linux