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Jeremy Roberts

Computer Scientist

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Computer scientist specializing in the application of artificial intelligence and machine learning in the field of data science.

EDUCATION & CERTIFICATIONS

MS, Computer Science, Data Science Concentration, *Appalachian State University*, 4.0 GPA
Program of study focused on artificial intelligence, machine learning, and data science: December 2023

- Causality and its impacts on data analysis and prediction using directed acyclic graphs, structural causal models, and counterfactual queries.
- Machine learning models including Gaussian processes, reinforcement learning, genetic algorithms, and foundational clustering and regression methods.
- Neural network structures including large language models, generative adversarial networks, and convolutional neural nets.

BS, Computer Science, *Appalachian State University*, *Magna Cum Laude* December 2022
Certificate in Data Science, *Appalachian State University* December 2022

EXPERIENCE

Research Assistant - Causality in Bayesian Optimization Jan 2023 — Dec 2023
Appalachian State University Boone, NC

- Designed and implemented algorithm for solving multi-information source Bayesian optimization problems through a causal lens using Gaussian process machine learning techniques.
- Performed Gaussian process regression on multiple data sources that represent the same process but were collected in differing ways, resulting in different DAGs.
- Paper to be published in Fall 2023 and implementation to be packaged and released under the BoTorch library.

Intern - Machine Learning Developer May 2022 — August 2022
Stallergenes Greer Ltd Lenoir, NC

- Employed Gaussian process machine learning techniques to optimize production of mycelia from historical growth data.
- Efforts resulted in average production yield increase of 20%+ and production time decrease of 20%+ across all 60+ products.
- Designed and implemented complete system for data storage, retrieval, and machine learning model querying through browser interface with automatic model retraining based on future updated data.

SKILLS

Languages & Tools Proficient with C/C++, Python, R, Java, and Perl
Proficient with BoTorch/PyTorch, Scikit-learn, and Keras machine learning/data science packages.
Familiar with C#, x86 assembly, and Haskell

Soft Skills Team supervision and leadership, problem-solving, conflict resolution, efficiency, perseverance.

PROJECTS & CODE SAMPLES

MycoNet2 Professional Project - Python
<https://github.com/robertsj3app/mycoNet2>

- Software system consisting of MySQL database, Windows Server, and custom Python code for training and querying Gaussian process regressor machine learning models with the purpose of optimizing product yield using historical data.
- Independently designed, developed, documented, and deployed into a production environment.

SmartLoop Educational Project - Python
<https://github.com/robertsj3app/smartloop>

- Employs machine learning preprocessing and dimensionality reduction techniques alongside MFCC audio analysis to generate an ideal path through a music playlist.

PROFESSIONAL MEMBERSHIPS

National Society of Leadership and Success Member since Fall 2020
National Society of Collegiate Scholars Member since Summer 2021
Boy Scouts of America, *Eagle Scout* 2013 — 2018