Seth Briney

Machine Learning Engineer

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Seth1Briney

Education

Master of Science Degrees:
GPA 3.87
Computer Science | Mathematics
Western Washington University
Bellingham, WA

Bachelor of Science | Bachelor of Arts:
GPA 4.0
Physics | Computer Science
The Evergreen State College
Olympia, WA

Technical Skills

Overview

- AI
  - Machine Learning
    - Deep Learning
    - Reinforcement Learning
- Statistical Data Analysis
- Algorithms
  - Mathematical Analysis
  - Parallel | Distributed

Career Summary

Western Washington University
Graduate Research Assistant
Duration: Mar. 2022 - Present
Graduate Teaching Assistant
Duration: Oct. 2021 - Mar. 2022

The Evergreen State College
Teaching Assistant
Duration: Oct. 2020 - Jun. 2021

College Tutor:
Bellingham Technical College:
Duration: Mar. 2020 - Mar. 2022
Skagit Vallege College:
Duration: Dec. 2019 - Jun. 2021

Passionate about scientific computing and AI, I am goal oriented and have a strong drive to expand, deepen, and apply my diverse skill-set toward delivering impactful results and innovative solutions to real-world problems. I possess both a strong theoretical background, and a proven aptitude for developing computational programs and algorithms to achieve high quality performance metrics in machine learning problems.

Languages, Modules, and Algorithms

skill means strong familiarity, **skill** means mastered.

- Python modules including: **Gymnasium/OpenAiGym, MatPlotLib, **Numpy**, *Pandas*, PyGame, SciKit-Learn, *SKRL*, TensorFlow, *WanDB*, **PyTorch****
- Computational languages including: **Julia, *MATLAB/Octave*, R**
- General languages including: ***BASH*, *C*, C++, C#, Java, **Python****
- Algorithms including: **Gaussian Mixture Model clustering, Expectation Maximization, Inverse Transform Sampling, Matrix Analytic Methods using SVD, QR factorization, Rejection Sampling, Red/Black SOR, Stochastic Integration**
- Mathematics and science disciplines including: ****Analysis**, *Algebra*, /*Calculus*, Chemistry, *Physics*, *Statistics***
- Computational techniques such as: **Distributed Computing, HPC, Meta Learning, Parallel Computing, Transfer Learning**
- Miscelaneous ***Bayesian Decision Theory*, *ChatGPT* Docker, EnergyPlus, Excel, Git, *LaTex*, Project Collaboration, *SQL***

- I am very interested in learning more about: bci, biology, biogerontology, ecology, investing, music theory, and neuroscience.

Experience

Time-frame	Summary
1 year	Worked in a funded research collaboration with **PNNL** focused on electric load forecasting for commercial office buildings using **EnergyPlus** for simulation and **PyTorch** for **deep learning**. Utilized **HTCondor** for **distributed HPC**, and **Weights and Biases for hyper-parameter** tuning in **meta/transfer-learning** experiments.
9 months	In another funded collaboration with **PNNL**, applied **deep reinforcement learning** toward achieving **optimal control** in a variety of **physics** simulators including **building energy** simulations. Contributed to the **Neuromancer** open-source project, acting as the lead programmer in **PslGym** to wrap **Neuromancer PSL Nonautonomous** systems in a **Gymnasium** interface for deep reinforcement learning control implemented with the **SKRL Python** module. Created **graphical** frameworks for debugging and **visualizing results** including an interactive TwoTank control game, using **Matplotlib** and **Pygame**. Achieved control with algorithms including: **A2C**, **DDPG**, **PPO**, **TD3**, and **TRPO**; in reference tracking and energy management physics control problems. Added random walk variants to the **Signals** nm sub-module for **robust sampling** in **data generation**.
1 year	Applied a variety of **tabular reinforcement learning** techniques including **Q-learning** and **Dyna-Q**, to a variety of academic **control problems** including **windy grid-world** and **maze-running**, following **Sutton/Barto**'s Introduction to Reinforcement Learning.
2 years	**Collaborated** with a team of **college tutors**, helping students at **BTC** and **SCV** in various technical subjects especially **algebra**, **calculus**, **chemistry**, **computer science**, and **physics**. Team members would often pass students to me with the more **challenging math** problems.