

Matthew Lyle Olson

Personal Information

matthewlyleolson@gmail.com
https://mattolson93.github.io/
Phone: 503-367-8893

Programming Languages & Tools

Python, JavaScript, bash, C#, C++, C, Java
Pytorch, NumPy/SciPy, Latex, Git, Kubernetes

Education

June. 2023: Ph.D. in Artificial Intelligence and
Computer Science, Oregon State University
Mar. 2020: M. S. in Computer Science,
June 2015: B. S. in Computer Science,
Oregon State University. Summa cum laude

Classes - Machine/Deep/Reinforcement Learning,
Artificial Intelligence, Theory of Statistics

Machine Learning Experience

Machine Learning Research Scientist, Lawrence Livermore National Labs (May 2023 - present)

- First authored a top-tier journal paper under review at *Nature Machine Intelligence*
- Improved predictions in the extreme few shot learning setting on sim-to-real fusion experiment data
- Designed a novel Vision Transformer based Masked Autoencoder to handle multi-modal data
- Increased simulation speed by over 4000x by using deep surrogate models for scientific simulations
- Built a Chatbot (Llama2) with Retrieval Augmented Generation using Kubernetes, Docker, and FastAPI
- Used ChatGPT4-V to tune visualizations parameters (e.g., UMAP/T-SNE) with no human intervention

Graduate Research Assistant, Oregon State University (advisor: Weng-Keen Wong) (Sept 2017 - June 2023)

- First authored a top-tier journal paper in *AI* on explaining RL agents using deep generative models
- First authored a top-tier conference paper in *VIS* to identify/explain dataset shift to non-experts
- Co-authored four conference papers, helping code deep vision models in PyTorch and plan user studies
- Designed user studies and developed user interfaces using C#, JavaScript, D3, and Flask
- Created a state of the art loss function for improving open set detection in neural networks
- Founded and led the Artificial Intelligence Graduate Student Associations with over 200 members

Machine Learning Research Intern, Lawrence Livermore National Labs (June 2021 - Dec 2022)

- First authored a paper for *CVPR* on understanding and auditing GANs beyond summary statistics
- Designed new algorithms for identifying unique and shared attributes between two datasets
- Built state of the art generative models for approximating data distributions (e.g., StyleGAN2)

ML Olson Consulting for Lexum and Medema (March 2021, March 2022)

- Improved semi-supervised multi-label accuracy of Saskatchewan court cases by 18% using LongFormer
- Reduced error of part manufacturing time predictions by 37% using tabular data with Pycaret

Machine Learning Research Intern, Bell-Labs (June 2019 - Aug 2019)

- Won the robotics competition at the Unix 50th anniversary international event
- Developed deep models to process arbitrary length sequential data for patent classification

Machine Learning Projects

- Deep Generative Multimedia Children's Literature: I wrote a workshop paper where I used multiple pretrained models (e.g., GPT-3 and Stable Diffusion) to produce fully automated fun youtube videos.
- WALDO: an Open Source machine learning based website for detecting cheating in video games. I am the lead for the machine learning team, building the prototype video prediction models.

Software Engineering Experience

Software Engineer, HP Inc. (July 2015-Sept 2017)

- Developed and maintained .Net UI for a multi-million dollar fleet of printer test tools
- Became team lead for the motion control software on the R&D and production tools
- Designed novel software for real-time error correction on rotary encoders

Undergraduate Researcher, Oregon State University (advisor: Dr. Alex Groce) (Mar 2014 - June 2015)

- Investigated Delta Debugging for the Siemens suite using Python and bash scripts
- Calculated Software Fault Localizations coefficients for the suite using Java