

Matthew Olson

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Programming Languages, Tools & Classes

- Python, C#, bash, JavaScript, C++, C, Java
- Pytorch, NumPy/SciPy, Tensorflow, Latex, Git
- Machine/Deep/Reinforcement Learning, Artificial Intelligence, Theory of Statistics

Selected Papers

(*UNDER REVIEW*) **Matthew L. Olson**, Neale Ratzlaff, Weng-Keen Wong. *Generalizing Cross Entropy Loss with a Beta Proper Composite Loss: An Improved Loss Function for Open Set Recognition*. ICLR 2022.

Matthew L. Olson, Rushil Anirudh, Jay J. Thiagarajan, Timo Bremer, Weng-Keen Wong, Shusen Liu. *Unsupervised Attribute Alignment for Characterizing Distribution Shift*. NeurIPS 2021 Workshop on Distribution Shifts.

Matthew L. Olson, Thuy-Vy Nguyen, Gaurav Dixit, Neale Ratzlaff, Weng-Keen Wong, Minsuk Kahng. *Contrastive Identification of Covariate Shift in Image Data*. IEEE Visualization Conference (VIS'21), 2021.

Matthew L. Olson, Roli Khanna, Lawrence Neal, Fuxin Li, Weng-Keen Wong. *Counterfactual State Explanations for Reinforcement Learning Agents via Generative Deep Learning*. Journal of Artificial Intelligence Research, 2021.

Lawrence Neal, **Matthew L. Olson**, Weng-Keen Wong, Xiaoli Fern, Fuxin Li. *Open Set Learning with Counterfactual Images*. Proceedings of the European Conference on Computer Vision (ECCV). 2018.

Experience

Graduate Research Assistant for Dr. Weng-Keen Wong (Sept 2017 - present)

- Collaborate closely with colleagues in the DARPA Explainable Artificial Intelligence project
- Develop interfaces and techniques with Density Ratio Estimation to explain Dataset Shift to non-experts
- Create state of the art algorithms for improving Open Set Detection in Neural Networks
- Designed Generative Adversarial Networks for the interpretation of AI systems

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

- Designed new algorithms for identifying unique and shared attributes between two datasets
- Investigated state of the art generative models for approximating data distributions (i.e. StyleGAN2)

Natural Language Processing Contractor, Lexum (March 2021)

- Improved semi-supervised multi-label accuracy of Saskatchewan court cases by 18% using LongFormer

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

- Won the robotics competition at the Unix 50th anniversary international event
- Utilized state of the art language models to perform 4G/5G patent classification
- Developed new deep learning models to process arbitrary length sequential data

Software Engineer for Testbed Tooling, 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
- Created software for real-time error correction on rotary encoders

Undergraduate Researcher for Dr. Alex Groce, Oregon State University (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

Education

Expected 2022: Ph.D. in Artificial Intelligence and Computer Science, Oregon State University

Nov. 2019: M. S. in Computer Science,

June 2015: B. S. in Computer Science, Oregon State University. Summa cum laude

Professional Training

- Project Management Fundamentals
- Dynamic Leadership
- Influence in the Workforce
- Visual Studio Live conference