Sarah Brockman

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Summary

Computer science MS student with research experience regarding fairness in machine learning and artificial intelligence. Pursuing data science and machine learning internship positions.

Education

University of Massachusetts, Amherst

M.S. Computer Science Sep. 2019 - May 2021, 4.0 GPA

- ML fairness research assistant in the Laboratory for Advanced Software Engineering Research (LASER)
- **Offline Contextual Bandits with High Probability Fairness Guarantees** published at NeurIPS 2019; presented work at poster session
- Baystate Fellowship recipient

B.S. Computer Science, B.S. Computational, Applied Mathematics; Statistics May 2019, 3.9 GPA

- Honors thesis on discrimination in Reinforcement Learning for Intelligent Tutoring Systems for the Autonomous Learning Laboratory (ALL)
- Undergraduate Course Assistant for Artificial Intelligence, Introduction to Java; duties include grading assignments and leading discussion sections
- Commonwealth Honors College, Departmental Honors in CS, Dean's List

Experience

MIT Lincoln Laboratory Lexington, MA

Machine Learning Intern - Cyber Operations and Analysis Technology May 2019 - Aug. 2019

- Developed a quantitative metric for testing a first-ever natural language document to workflow net generator for automatic process mining
- Implemented a graph search algorithm similar to A* to align workflow instances with a workflow net
- Developed optimization heuristics for the search to ensure efficiency for all possible inputs
- Co-authored paper submitted to ACL 2020 and presented work to senior staff

Machine Learning Intern - Space Systems Analysis and Test May 2018 - Aug. 2018

- Developed a deep learning model (Convolutional Neural Network) to detect closely-spaced objects (CSOs) in space using single and binary star data
- Performed a thorough comparison between CNNs and other machine learning models
- Tested model accuracy against various angular separations and magnitude differences in CSOs
- Co-author of: Sierchio, J.M., Birge, J., Brockman, S., et al. Deep Learning for Space Object Identification. In *AFRL Space Situational Awareness Conference (SSA)*, 2018.

Knolls Atomic Power Laboratory Niskayuna, NY

Software Engineering Intern May 2017 - Aug. 2017, Winter 2017

- Developed physics analysis software for collecting/processing data during tests on nuclear reactors
- Developed script to automate software configuration verification before field tests, saving physicists many hours per test
- Created a GUI for input data used in live measurements during field tests
- Wrote comprehensive unit tests and performed manual testing, as well as worked under time constraints to complete work efficiently before deadline

Skills

- Programming: Python, C, C++, Java, MATLAB, SQL, SAS
- Environments/Technologies: Windows, Linux/Unix, Vim, Eclipse, Qt, Git, Tensorflow, PyTorch, Scikit-learn, Scrum and Agile Development
- Relevant Coursework: Algorithms for Data Science, Systems for Data Science, Machine Learning, NLP