AXEL BROWNE

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EDUCATION

B.S. Computer Science, Loyola Marymount University **2022**

- Graduated Magna Cum Laude (GPA 3.74)
- Minor in Economics
- Arrupe Merit Scholarship
- LMU Association for Computing Machinery: Executive Board, Events Coordinator, Mentor

EXPERIENCE

Computational Epidemiologist, Los Alamos National Labs **2022-2023**

- First-authored a paper that evaluated disease surveillance methods for early outbreak detection in complex social networks and explored their applicability in the real world.
- Contributed a novel method for disease surveillance that outperforms existing methods.
- Generated a contact network representing of NYC (6.8M individuals, 2.3B interactions)
- Created a geographic visualization that is featured on the company website of the NYC network.
- Utilized high performance computing paradigms to simulate disease outbreaks in various synthetic contact networks (>100 simulations each).
- Led weekly meetings with top scientists in the field to present progress and receive guidance.

Teaching Assistant, LMU Dept. of Computer Science **2021-2022**

- Assisted in teaching two upper-division undergraduate courses, Artificial Intelligence and Cognitive Systems Design, covering a range of machine learning topics.
- Conducted office hours in both courses twice weekly, averaging 3 students per session.
- Evaluated hundreds of exams, programming projects, and other assignments, providing constructive feedback to students while maintaining <1 week turnaround.

Researcher, LMU Summer Undergraduate Research Program **2021**

- First-authored (and was the lead engineer on) a paper published in AAMAS'22.
- Investigated multi-agent communication across heterogeneous environments using Causal Inference—an exciting field within data science and machine learning.
- Developed a Python model to compare communication policies in a multi-armed bandit problem.
- Wrote a Python library for solving Causal and Bayesian Inference problems.

SKILLS

- **Programming Languages:** Python, Java, R, JavaScript, C++, C
- **Programming Libraries:** numpy, pandas, PyTorch, plotly, React
- **Software:** Windows, MacOS, Linux, Git, Excel, Stata, Gephi
- **AI/Machine Learning:** 2 Research Papers, Lead TA for Artificial Intelligence and Cognitive Systems Design, Coursework in Deep Learning and Natural Language Processing (grad level)

PUBLICATIONS

- Browne A. & Forney A. (2022). Exploiting Causal Structure for Transportability in Online, Multi-Agent Environments. In Proceedings of the 21st International Conference on Autonomous Agents and Multiagent Systems (AAMAS '22).
- Browne A. (2023). Evaluating Disease Surveillance Strategies for Early Outbreak Detection in Contact Networks with Varying Community Structure. Pending review by PLOS Computational Biology.