Anthony DiGiovanni

Research Interests

Reinforcement learning, Markov games, statistical learning theory, artificial intelligence safety

Education

2019–present **Ph.D. Statistics**, *University of Michigan*, Ann Arbor, MI.
Advisor: Prof. Ambuj Tewari

2015–2019 **B.S. Computational and Applied Mathematics**, *The University of Chicago*, Chicago, IL.
GPA: 3.83

Publications

2. **DiGiovanni, A.**, Tewari, A. (2021) "Thompson Sampling for Markov Games with Piecewise Stationary Opponent Policies," In *Proceedings of the 37th Annual Conference on Uncertainty in Artificial Intelligence*. Accepted.
1. **DiGiovanni, A.**, Demanelis, K., Tong, L., Argos, M., Shinkle, J., Jasmine, F., Sabarinathan, M., Rakibuz-Zaman, M., Sarwar, G., Islam, M. T., Shahriar, H., Islam, T., Rahman, M., Yunus, M., Graziano, J., Gamble, M. V., Ahsan, H., Pierce, B. L. (2020) "Assessing the impact of arsenic metabolism efficiency on DNA methylation using Mendelian randomization," *Environmental Epidemiology*, 4 (2), e083.

Teaching

2019–2020 **Graduate Student Instructor**, *University of Michigan*, Ann Arbor, MI.
- STATS 250: Introduction to Statistics & Data Analysis (Winter 2020)
  - Weekly conceptual lab for 25 students, 1.5 office hours, homework and exam grading.
- STATS 280: Honors Introduction to Statistics & Data Analysis (Fall 2019)
  - Weekly R programming lab for 34 students, 3 office hours, homework and exam grading.

2018 **Teaching Assistant**, *The University of Chicago*, Chicago, IL.
- MATH 13200: Elementary Functions and Calculus II (Winter 2018)
  - Two weekly problem sessions for 10 students, homework grading.

Work Experience

2020 **Research Fellow**, *Center on Long-Term Risk*, Remote.
- Wrote a literature review and critical assessment of proposals for safe machine learning.

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2019 **Research Intern**, *Wild Animal Initiative*, Remote.

- Developed and implemented matrix population models in Python for the analysis of predator-prey dynamics, density-dependent growth, and changes in age structure.
- Wrote scripts for querying an ecological database.
- Wrote a software user guide and demonstration/methods section explaining the advantages of a new matrix population model framework, including greater biological realism and utility for quantifying animal demography.

2018–2019 **Research Assistant**, *The University of Chicago*, Chicago, IL.

- Wrote R scripts for processing and organization of public health data, as well as statistical analyses such as multivariate regression, causal inference tests, mediation analysis, gene-environment interaction analysis, and Mendelian randomization.
- Developed machine learning models in Python and R for prediction of aging outcomes based on biomarkers.
- Reviewed literature in epidemiology, genomics, and statistics to assist data interpretation and methodology.

Awards

2020–2021 Research Grant, Center on Long-Term Risk

2018–2019 College Research Fellows Program, The University of Chicago

2018 Public Health Sciences Summer Fellowship, The University of Chicago

Presentations

2021 Michigan Student Symposium for Interdisciplinary Statistical Sciences, Poster

Computing Skills

Python, R