Julia Walchessen

Pittsburgh, PA
google scholar | jwalches@andrew.cmu.edu | personal website | jmwalchessen

Education

Carnegie Mellon University **August 2020–July 2025**
PhD Statistics and Data Science Department *Pittsburgh, PA*

- PhD Advisor: Prof. Mikael Kuusela
- Thesis title: Neural Inference for Complex Spatial Processes

University of Chicago **2016-2020**
B.S. in Mathematics, B.A. in Statistics with Honors, Computer Science minor *Chicago, IL*

Research Interests

Profile: spatial statistician

Research Interests: spatial statistics, uncertainty quantification, machine learning, simulation-based inference

Publications

Published

- **J. Walchessen**, A. Lenzi, and M. Kuusela. Neural Likelihood Surfaces for Spatial Processes with Computationally Intensive or Intractable Likelihoods. *Spatial Statistics* 62, 100842.
  Cited by 23 (Google Scholar, as of Sept 2025)

Preprint

- **J. Walchessen**, A. Zammit–Mangion, R. Huser and M. Kuusela. Neural Conditional Simulation for Complex Spatial Processes. preprint arXiv:2508.20067 [stat.ME], **2025**.

In Preparation

- **J. Walchessen**, R. Huser and M. Kuusela. Modeling Spatial Extremes Data via a Neural Inference Pipeline. Manuscript in Preparation.
- J. Platero, **J. Walchessen**, M. Kuusela and J. Mateu. Neural Likelihood-free Methods for Spatial Cluster Point Patterns. Manuscript in Preparation.

Professional Experience

Carnegie Mellon University **August 2025-Present**
Postdoctoral Fellow *Pittsburgh, PA*

- Research on simulation-based inference in spatial statistics

University of Wollongong **May 2024-Jan 2025**
Associate Research Fellow *Wollongong, Australia*

- Simulation-based inference in spatial statistics under the supervision of Prof. Zammit-Mangion at the University of Wollongong

King Abdullah University of Science and Technology **November 2024**
Visiting Student Researcher *Jeddah, Saudi Arabia*

- Simulation-based inference in spatial statistics under the supervision of Prof. Huser at King Abdullah University of Science and Technology

Teaching Experience

Lead Instructor

- **Data Engineering and Distributed Environments** (database development and management for master's students), CMU, Fall 2025

Head Teaching Assistant

- **Advanced Methods for Data Analysis** (advanced regression analysis for third and fourth year statisticians), CMU, Spring 2024
- **Statistical Graphics and Visualization** (data visualization for undergraduate students), CMU, Fall 2022

Teaching Assistant

- **Statistical Graphics and Visualization** (data visualization for undergraduate students), CMU, Fall 2023
- **Time Series and Experimental Design** (master's students), CMU, Spring 2023
- **Reasoning with Data** (introduction course for undergraduates), CMU, Summer 2022
- **Time Series and Experimental Design** (master's students), CMU, Spring 2022
- **Probability Theory and Random Processes** (introduction to probability theory for undergraduates), CMU, Spring 2021
- **Statistical Computing** (for master's students), CMU, Fall 2021
- **Modern Regression** (introduction to regression for undergraduates), CMU, Fall 2020

Course Development

- **Data Engineering and Distributed Environments** (aided Prof. Reinhart with course development for master's class on database development), CMU, Summer 2023

Awards

American Statistical Association **January 2024**
ENVR Student Paper Winner

- The paper Neural Likelihood Surfaces was selected as one of two winning papers in the annual ENVR student paper competition

Spatial Statistics Conference **August 2023**
Oral Presentation Award *Boulder, CO*

- Determined by popular vote for a talk on the paper Neural Likelihood Surfaces

Invited Talks

- Neural Conditional Simulation, invited conference talk, Royal Statistical Society International Conference, Edinburgh UK, September 2025
- Neural Conditional Simulation, invited conference talk, The International Environmetrics Society (TIES) Conference, Adelaide Australia, December 2024
- Neural Conditional Simulation, invited seminar, King Abdullah University of Science and Technology, Jeddah Saudi Arabia, November 2024
- Neural Likelihood Surfaces, invited conference talk, ASA Environmental (ENVR) Stutent Paper Award Section, Joint Statistical Meetings, Portland Oregon, August 2024

Other Talks

- Neural Conditional Simulation, conference talk, Spatial Statistics, Noordwijk Netherlands, July 2025
- Neural Conditional Simulation, conference talk, Conference on Computational Science and Engineering, Society for Industrial and Applied Mathematics, Forth Worth Texas, March 2025
- Neural Likelihood Surfaces, conference talk, Joint Statistical Meetings, Toronto Canada, August 2023
- Neural Likelihood Surfaces, conference talk, Spatial Statistics, Boulder Colorado, July 2023

Service

- Served as referee for **The Annals of Applied Statistics**

TECHNICAL SKILLS

Languages: Python, C, SQL, R
Skills: Linux, GitHub, Microsoft Azure cloud computing, parallel computing, neural networks, diffusion models, tensorflow, pytorch, distributed learning, web app development