DENNIS HOFMANN

DATA SCIENCE PH.D. STUDENT

dennis@planethofmann.com (732) 737-1292 dennis.planethofmann.com

EXPERIENCE

Aug 2021 – Present
Research Assistant | Worcester Polytechnic Institute

- Developing novel AI/ML algorithms as an NSF NRT fellow to address challenges with the current outlier detection pipeline.

Jul 2025 – Sept 2025
Autonomous Systems Intern | Nokia Bell Labs

- Developed a novel anomaly detection system for multi-agentic AI systems resulting in two patents currently under submission

Jun 2021 – Aug 2021
Data Analyst Intern | The Hanover Insurance Group

- Updated help desk data dashboard allowing visualization of common internal employee service requests based on text mining. Dashboard improved functionality of the help center.
- Analyzed customer data to predict sales opportunities providing business leaders with data driven knowledge to enhance company profitability.

May 2020 – May 2021
Research Assistant | University of Massachusetts Amherst

- Built computational model on an NIH grant to model injection drug use and sexual transmission networks of the homeless population in the U.S. The model determined optimal intervention combinations for the prevention of HIV transmission.
- Developed website containing a COVID-19 simulation model for the analyses of COVID-19 control in a university setting.

Jan 2020 – May 2020
Research Assistant | DSC-WAV

- Automated the process of data management on an NSF funded project for a non-profit nature conservancy saving the conservancy hours of manual data handling.

EDUCATION

M.S. / Ph.D. in Data Science
Aug 2021 – Present
Worcester Polytechnic Institute
Worcester, MA
DAISY Lab, NSF NRT Fellow

B.S. in Informatics
Sep 2017 – May 2021
Magna Cum Laude
University of Massachusetts
Amherst, MA
Commonwealth Honors College
GPA: 3.94/4.00

PROGRAMMING SKILLS

- Python
- Java
- R
- SQL
- JavaScript
- HTML/CSS

TOOLS AND FRAMEWORKS

- PyTorch
- Scikit-learn
- Git

SPOKEN LANGUAGES

- English (fluent)
- German (fluent)
- Spanish (intermediate)

Sep 2019 – Jan 2020
Research Assistant | University of Massachusetts

- Developed algorithm working closely with a marketing professor to gather and analyze data related to UMass' BDIC alumni to drive decisions for program marketing.

MENTORSHIP

Aug 2023 – May 2024
Project Mentor | WPI Major Qualifying Project – Anomaly Detection

- Led a team of 4 undergraduate students, in their first research experience, to improve and deploy an innovative web-based outlier detection system designed for domain experts.

Aug 2023 – May 2024
Project Mentor | WPI Major Qualifying Project – Explainable AI

- Led a team of 5 undergraduate students in a research project focused on developing human-computer interfaces for lay users to properly display explanations to a machine learning model's predictions.
- Work was published in VLDB 2024 demo track.

PUBLICATIONS

2025
Dennis M. Hofmann, Peter M. VanNostrand, Lei Ma, Huayi Zhang, Joshua C. DeOliveira, Lei Cao, and Elke Rundensteiner. Agree to Disagree: Robust Anomaly Detection with Noisy Labels. ACM SIGMOD 2025.

Lei Ma, Lei Cao, Peter M. VanNostrand, **Dennis M. Hofmann**, Su Yao, and Elke Rundensteiner. Pluto: Sample Selection for Robust Anomaly Detection on Polluted Log Data. ACM SIGMOD 2025.

2024
Peter M. VanNostrand, **Dennis M. Hofmann**, Lei Ma, Belisha Genin, Randy Huang, and Elke Rundensteiner. Counterfactual Explanation Analytics: Empowering Lay Users to Take Action Against Consequential Automated Decisions. VLDB 2024 (demo).

Peter M. VanNostrand, **Dennis M. Hofmann**, Lei Ma, and Elke Rundensteiner. Actionable Recourse for Automated Decisions: Examining the Effects of Counterfactual Explanation Type and Presentation on Lay User Understanding. FAccT 2024.

2023
Peter M. VanNostrand, Huayi Zhang, **Dennis M. Hofmann**, and Elke Rundensteiner. FACET: Counterfactual Explanation Analytics. ACM SIGMOD 2023.

2022
Dennis M. Hofmann, Peter M. VanNostrand, Huayi Zhang, Yizhou Yan, Lei Cao, Samuel Madden, and Elke Rundensteiner. A Demonstration of AutoOD: A Self-Tuning Anomaly Detection System. VLDB 2022 (demo).

PROJECTS

Ongoing Projects:

Unsupervised Sample Generation

- Developing new ideas to generate samples in an unsupervised setting for the improvement of down-stream classification tasks.
- Leveraging AI/ML deep learning techniques.

Completed Projects:

Robust Anomaly Detection with Noisy Labels

- Developed and implemented a novel approach to deep outlier detection. Instead of relying on traditional unsupervised methods, I tackled the challenge from a new direction, by first generating noisy pseudo labels and then intelligently using them to train a supervised deep learning model.
- Work was accepted for publishing at ACM SIGMOD 2025

AutoOD: A Self-Tuning Anomaly Detection

- Integrated a novel anomaly detection method into an easy-to-use interface saving model developers from a time-consuming method selection and hyperparameter tuning process.
- Work was published in VLDB 2022 demo track.

Finalist for Facebook Data Analytics Challenge

- Extracted and analyzed insights from large datasets given by Facebook to create a new innovative idea for a mock company. The business idea and underlying insights were presented to Facebook leaders.

Data Fest (data analytics challenge)

- Collaborated with data scientists from Indeed to uncover correlations in large datasets to extract insights about job searches.

HONORS AND AWARDS

Feb 2025: 1st place at WPI's Graduate Research Innovation Exchange (GRIE)

- Awarded 1st place and a travel grant at WPI's GRIE where I presented a poster highlighting my research on deep learning for anomaly detection.

Dec 2024: Awarded WPI Data Science Leadership Award

- Recognized as a data science graduate student for outstanding leadership in the department, on campus, and beyond.

May 2024: Awarded WPI Data Science Graduate Community Building Award

- Commended as a data science graduate student for outstanding commitment to building community in the department, on campus, and beyond.

May 2021: Magna Cum Laude, UMass Amherst

LEADERSHIP AND COMMUNITY OUTREACH

Sep 2023 – Present
Data Science/AI Council at WPI | Elected Vice President

- Lead the planning and coordination of data science/AI student-run events at WPI. From setting up industry and faculty research talks, to hosting social events, my goal is to foster strong collaborations and strengthen the student community within the department.

Oct 2022 – Present
Women in Data Science | Volunteer

- Organizing annual Women in Data Science conference at WPI.

Jul 2021 – Present
Baypath Human Society | Volunteer data scientist

- Developed and maintain an automated system to query the shelter's animal database and send monthly medication reminders to foster caregivers. This solution reduces the time shelter staff spend organizing and contacting fosterers, enabling them to prioritize in-shelter animal care.

- Built and continue to update an automated easy-to-use data dashboard providing the shelter with a way to quickly view and understand their data. Dashboard allows employees to quickly and effortlessly provide stakeholders with information needed for donor campaigns.

Sep 2017 – May 2021
UGRID (Undergraduate Researchers Interested in Data)

- Guided students in gaining hands-on experience with data analytic tools.