

Jimmy Hickey

jimmyjhickey@gmail.com | jimmyjhickey.com | [/in/jimmyjhickey](https://in.jimmyjhickey) | (919) 480 2225

Education

Ph.D. Statistics 2024

M.S. Statistics 2020

North Carolina State University

Bayesian Transfer Learning Methods with Uncertainty Quantification for Biomedical Applications

B.S. Computer Science; B.S. Physics; B.A. Mathematics 2018

Winona State University

Minors: Statistics, Data Science

Skills

Languages: Python, R, Julia, C/C++, Bash/Unix, Java, SQL

Tools & Frameworks: PyTorch, TensorFlow, CUDA, Linux, HPC Environments, Git

Methods: Transfer Learning, Generative AI, Machine Learning, Uncertainty Quantification, NLP/LLMs

Soft Skills: Statistical Consulting, Teaching, Data Visualization, Interdomain Communication

Professional Experience

Machine Learning Researcher 2019 - present

Duke Clinical Research Institute

- The applied focus of this work has been to improve stroke risk prediction. Using a combination of multiple studies, we were able to successfully improve stroke diagnosis, especially in underrepresented minorities. The goal of this work is to improve patient care and equity.
- Lead development and publication of a flexible machine learning method improving predictive performance and interpretability of time-to-event outcomes (see publications 2 and 5).
- Develop novel transfer learning methods addressing demographic bias in predictive modeling (see publication 1).

Statistics Researcher 2019 - present

North Carolina State University

- The applied focus of my work has been to improve patient care by looking at medical data. We have been successfully able to improve predictions of whether patients will go into shock upon being admitted into the ICU and to predict common dental measurements that can be early signs of tooth decay.
- Create a source free Bayesian transfer learning method improving predictive performance with uncertainty quantification (see publications 3 and 4).
- Implement state-of-the-art transfer learning methods in Python, R, and Julia.
- Implement Generative AI models to compare method performance (see publication 6).
- Present work at conferences and events to diverse audiences.

Statistical Scientist 2020 - 2024

Sandia National Laboratories

- Solved problems involving combining multiple remote sensing data sets, physics based statistical modeling, and computer vision.
- Optimized statistical computing methods, reducing computational complexity by a factor of $O(n^2)$.
- Supported national defense using RNNs and deep learning for signal processing.
- Modeled trajectories for engineering applications using functional data analysis.

Co-Founder

2020 - 2023

NCSU Statistics in the Community

- Secured clients for a pro bono consulting group.
- Visualized data and predictive results in reports and presentations given to non-statistical clients.
- Manage and mentor new consultants.
- Mapped unmet need to allocate donated furniture and analyzed school system data for unmet adolescent need. [\[report\]](#)
- Developed interpretable metrics for donation lag times. [\[report\]](#)
- Analyze newsletter data to improve click-through and subscriber retention. [\[report\]](#)

Tutor

2016 - 2022

Winona State University & North Carolina State University

- Tutored students in computer science, statistics, physics, and mathematics.
- Assisted the highest number of students per year at Winona State University.
- Provided one-on-one and small group tutoring, and classroom teaching.

Genomic Systems Programmer Analyst

2018 - 2019

Mayo Clinic

- Developed variant annotation and microbiome pipelines for researchers and clinicians.
- Optimized bioinformatics algorithms to parallelize for high-performance computing (HPC).
- Create onboarding procedures for new hires.

Software Engineer

2016 - 2018

Digi International

- Build firmware for microcontrollers, routing devices, and embedded systems.
- Write automated unit, integration, and system tests for multiple teams.
- Participate in an agile development environment.

Technical Support

2015 - 2016

Winona State University

- Help faculty, staff, and students with technical problems over the phone and onsite.
- Troubleshoot both hardware and software issues.

Publications

1. **J Hickey**, J P Williams, E C Hector (2024). Transfer Learning with Uncertainty Quantification: Random Effect Calibration of Source to Target (RECaST). *The Journal of Machine Learning Research* [\[manuscript\]](#)
2. **J Hickey**, R Henao, M Pencina, D M Wojdyla, M Engelhard (2024). Adaptive Discretization for Event Prediction (ADEPT). *AISTATS* [\[manuscript\]](#)
3. C Hong, M Liu, D M Wojdyla, **J Hickey**, M Pencina, R Henao (2024). Trans-Balance: Reducing Demographic Disparity for Prediction Models in the Presence of Class Imbalance. *The Journal of Biomedical Informatics* [\[manuscript\]](#)
4. **J Hickey**, E C Hector, J P Williams (202x). Multivariate and Online Transfer Learning with Uncertainty Quantification. *In Review* [\[arXiv\]](#)