Jimmy Hickey

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| Education | |
| **Ph.D. Statistics** 2019 - 2024  **M.S. Statistics** 2019 - 2020  *North Carolina State University*  Thesis: *Bayesian Transfer Learning Methods with Uncertainty Quantification* | |
| **B.S. Computer Science; B.S. Physics; B.A. Mathematics** 2014 - 2018  *Winona State University*  *Minors: Statistics, Data Science*   |  | | --- | | Skills |   **Languages:** Python, R, Julia, C/C++, Bash, 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*   * Lead development and publication of a flexible **machine learning** method improving predictive performance and interpretability of time-to-event outcomes (see publication 2). * Extend this method to consider multivariate outcomes (see publication 6). * Develop novel transfer learning methods addressing demographic bias in predictive modeling (see publication 1). |
| **Statistics Researcher** 2019 - present  *North Carolina State University*   * Create a source free Bayesian transfer learning method improving predictive performance with **uncertainty quantification** (see publication 3). * Extend this method to consider multivariate outcomes and multiple target data sets (see publications 4 and 5). * Implement state-of-the-art transfer learning methods in Python, R, and Julia. * Implement **Generative AI** models to compare method performance (see publication 7). * Present work at conferences and events to diverse audiences.   **Statistical Scientist** 2020 - 2024  *Sandia National Laboratories*   * Optimized statistical computing methods, reducing computational complexity by a factor of . * Supported national defense using RNNs and deep learning for signal processing. * Modeled trajectories for engineering applications using functional data analysis. | |
| **Lead Consultant** 2020 - 2023  *NCSU Statistics in the Community*   * Secured clients for a pro bono consulting group. * Mapped unmet need to allocate donated furniture and analyzed school system data for unmet adolescent need. [[report](https://jimmyjhickey.com/files/the_green_chair_project_report.pdf)] * Developed interpretable metrics for donation lag times. [[report](https://jimmyjhickey.com/files/note_in_the_pocket_report.pdf)] * Analyze newsletter data to improve click-through and subscriber retention. [[report](https://jimmyjhickey.com/files/activate_good_report.pdf)] * Visualized data and predictive results in reports and presentations given to non-statistical clients. * Manage and mentor new consultants.   **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 and routing devices. * 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. 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](https://www.sciencedirect.com/science/article/abs/pii/S1532046423002538?via%3Dihub)] 2. **J Hickey**, R Henao, M Pencina, D M Wojdyla, M Engelhard (2024). Adaptive Discretization for Event PredicTion (ADEPT). *AISTATS* [[manuscript](https://proceedings.mlr.press/v238/hickey24a/hickey24a.pdf)] 3. **J Hickey**, J P Williams, E C Hector (202x). Transfer Learning with Uncertainty Quantification: Random Effect Calibration of Source to Target (RECaST). R&R at *The Journal of Machine Learning Research* [[arXiv](https://arxiv.org/abs/2211.16557)] 4. **J Hickey**, E C Hector, J P Williams (202x). Online Bayesian Transfer Learning with Uncertainty Quantification with Multiple Outcomes. *In Progress* 5. **J Hickey**, R Henao, M Pencina, D M Wojdyla, M Engelhard (202x). Multivariate Outcome Classification Through Learned Hyperplanes. *In Progress* 6. **J Hickey**, D Elsheimer (2020) Performance Comparison of Generative Adversarial Network Variants [[manuscript](https://jimmyjhickey.com/files/Hickey_Performance_Comparison_of_Generative_Adversarial_Network_Variants.pdf)] | |
| Professional Presentations | |
| 1. Adaptive Discretization for Event PredicTion (ADEPT). *AISTATS Poster Presentation*. May 2024 2. Transfer Learning with Uncertainty Quantification: Random Effect Calibration of Source to Target (RECaST). *Joint Statistical Meeting Oral Presentation.* August 2023 3. Transfer Learning with Uncertainty Quantification: Random Effect Calibration of Source to Target (RECaST). *North Carolina State University Graduate Research Symposium Poster Presentation*. April 2023 4. Trans-Balance: Reducing Demographic Disparity for Prediction Models in the Presence of Class Imbalance. *Duke University Oral Presentation*. April 2023 5. Transfer Learning with Uncertainty Quantification: Random Effect Calibration of Source to Target (RECaST). *ENAR Poster Presentation*. March 2023 6. Improving Event Time Prediction by Learning to Partition the Timeline. *Duke University Oral Presentation*. March 2023 7. Improving Event Time Prediction by Learning to Partition the Timeline. *North Carolina State University Oral Seminar*. September 2022 8. Transfer Learning with Uncertainty Quantification: Random Effect Calibration of Source to Target (RECaST). *Joint Statistical Meeting Poster Presentation*. August 2022 | |
| Service | |
| |  | | --- | | * Session Chair *ENAR* 2023 | | * Student Representative *NCSU Statistics Seminar Committee* 2022-2023 | | * Graduate Mentor *NCSU Summer Institute in Biostatistics* 2022 | | * President *NCSU Statistics Graduate Student Association* 2020-2022 | | * Organizer *NCSU Virtual Datathon* ([article](https://sciences.ncsu.edu/news/virtual-datathon-draws-more-than-100-students-from-universities-across-n-c/)) 2021 | | * Organizer *NCSU College of Science Research Symposium* 2021 | | * Organizer *NCSU Statistics Prospective Student Visit Day* 2020 | | * Organizer *NCSU Deep Learning Reading Group* 2019-2020 | | * Vice President *WSU Women in Computer Science Club* 2017-2018 | | * Student Representative *WSU Dean’s Advisory Council* 2017-2018 | | * President *WSU Physics Club* 2015-2018 | | |
| Honors and Awards | |
| |  | | --- | | * Paige Plagge Graduate Award for Citizenship *NCSU Statistics Department* 2021 | | * Outstanding Graduate in Computer Science *WSU* 2018 | | * Outstanding Graduate in Physics *WSU* 2018 | | * Outstanding Graduate in Mathematics *WSU* 2018 | | * Outstanding Student Leader Nominee *WSU* 2018 | | * 1st Place *Midwest Undergraduate Data Analytics Competition* 2018 | | * Best College Overall *ASA Police Data Challenge* ([link to competition](https://thisisstatistics.org/police-data-challenge-congratulations-to-our-winners/)) 2018 | | * Top 5 Undergraduate *MinneAnalytics Data Analytics Competition* 2017 | | |