Eamonn Tweedy, Ph.D.

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EXPERIENCE

- **Completed an original end-to-end data science project** in which I evaluated factors which create the most risk for cyclists involved in road collisions in Pennsylvania and concluded with a list of data-driven recommendations for improving safety outcomes for cyclists. I wrote this project in Python via Jupyter notebooks, and my work includes data acquisition, data cleaning, feature engineering, data visualization, selecting machine learning classification models (logistic regression and gradient boosted decision trees), and evaluating those models using various metrics.
  View my project on GitHub: `https://github.com/e-tweedy/PA_bike_crashes_2002-2021`

Tenured Associate Professor of Math	Widener University | 2019-2023
Assistant Professor of Math	Widener University | 2014-2019
G.C. Evans Instructor of Math	Rice University | 2011-2014

- **Planned, coordinated, and executed individual and collaborative research projects in math** in which we developed new numerical and algebraic features, as well as discovered new properties of existing features, which can be used to classify mathematical knots and abstract spaces. I have authored or co-authored seven peer-reviewed academic articles published in national and international math journals.
  View my Google scholar profile:
- **Chaired a University-wide faculty Technology and Instructional Resources Committee** (2019-2021) and led the committee in collaborating with campus IT staff on several projects, including: transitioning faculty to the Canvas learning management system, supporting faculty success in online teaching during the pandemic, and facilitating the successful rollout of multi-factor authentication to employee Office 365 accounts.
- **Developed public speaking skills and the ability to present complex topics clearly to a range of audiences** via 12 years of experience teaching advanced undergraduate and graduate math courses and delivering presentations about my research. I have consistently earned outstanding teaching evaluations from students and colleagues, and former students routinely recommend my classes to their peers.

TECHNICAL SKILLS AND KNOWLEDGE

- **Python including data science and machine learning libraries:** Pandas, NumPy, Scikit-learn, PyTorch, XGBoost, Statsmodels, Matplotlib, Seaborn, Plotly, Natural Language Toolkit
- **Math expertise:** Calculus and differential equations, linear algebra, abstract algebra, statistics and probability, graph theory and discrete math, geometry, and topology.
- **Machine learning models and techniques:** linear models, KNN, SVM, decision trees, clustering, bagging and boosting techniques
- **Neural network architectures and applications:** MLP, CNN, RNN, GAN, transformers, diffusion
- **Time series forecasting methods:** ARIMA, (Neural) Prophet, LSTMNN
- **Data science principles and techniques:** dimensionality reduction e.g. PCA, LDA, manifold learning; data cleaning and feature engineering; and data exploration and visualization
- Proficiency in SQL (PostgreSQL, MySQL), LaTeX, Git, Microsoft Office Suite

EDUCATION

Ph.D. in Math (2011) & M.A. in Math (2007)	Univ of California Los Angeles | 2006-2011 | Cum. GPA 3.848
B.S. in Applied Math & B.S. in Physics	North Carolina State Univ | 2002-2006 | Cum. GPA 3.929

PROFESSIONAL REFERENCES

Dr. Tom Goldstein
tomg@cs.umd.edu
Professor of Computer Science
University of Maryland

Dr. Shelly Harvey
shelly@rice.edu
Professor of Mathematics
Rice University

Dr. Neil Watling
nawatling@widener.edu
Associate Professor of Mathematics, Widener University