Nikolas Siapoutis

nis220@pitt.edu | LinkedIn

Education

Ph.D. in Statistics, The Pennsylvania State University, University Park, PA — Aug 2022

- Thesis: *Shrinkage Estimation for the Diagonal Multivariate Natural Exponential Families.*
- Advisors: Donald Richards, Bharath Sriperumbudur.

M.Sc. in Statistics, The Pennsylvania State University, University Park, PA — Dec 2019

- Thesis: *Mean Shrinkage Estimators in Hilbert Spaces.*
- Advisor: Bharath Sriperumbudur.
- Relevant coursework: statistical learning theory, artificial intelligence, stochastic processes, Bayesian inference, non-parametric statistics, data mining, theory of statistics, asymptotic tools, design and analysis of experiments, statistical inference, regression analysis and modeling, advanced probability theory.

B.Sc. in Mathematics and Statistics, University of Cyprus, Nicosia, Cyprus — Jun 2016

- Coursework areas: applied mathematics, numerical analysis, probability, statistics, algebra, analysis, geometry, computing.

Work Experience

Teaching Assistant Professor, University of Pittsburgh, Pittsburgh, PA — Aug 2022 – Present

- STAT 1000: Applied Statistical Methods (Fall 2025, Spring 2025).
- STAT 1050: Data Jam - Using Big Data for Community Good (Fall 2024/2025).
- STAT 1060: Data Science Foundations (Fall 2024/2025).
- STAT 1100: Statistics and Probability for Business Management (Fall 2022/2023/2024, Spring 2023/2024).

Graduate Assistant, The Pennsylvania State University, University Park, PA — Aug 2016 – Aug 2022

- Instructor: Teach elementary statistics to classes of approximately 30 students each. Organize course, design syllabus, create homework and exams. Leverage and administer an online platform to create an engaging environment with discussion boards, videos, and online group sessions.
- Teaching assistant: Assist with graduate-level courses on the design and analysis of experiments, categorical data analysis, and applied time series analysis, as well as some undergraduate-level courses on mathematical statistics, experimental methods, biometry, elementary statistics, and introduction to SAS.
- Laboratory assistant: Facilitate weekly laboratory sessions of approximately 80 students each.
- Research assistant: Applied machine learning techniques and causal models to a dataset of 1,400 homeless youth in the United States to identify opioid users and used an optimization formulation to assign the users to appropriate rehabilitation programs. Showed that our approach outperforms baselines by 110% in minimizing the number of homeless youth suffering from opioid addiction. Collaborated with social work scientists. Performed statistical analysis using Excel, R, and Gurobi.
- Statistical consultant: Provided consultation and support to approximately 30 clients of the statistical consulting center as a part of my Ph.D. training. Gained broad exposure to topics related to survey design, data collection, the design of experiments, and statistical modeling. Effectively communicated with non-statisticians and worked closely with my team and supervisor. Performed statistical analyses using R, MATLAB, Minitab, and SAS.

Research Statistics Intern, GlaxoSmithKline (GSK), Upper Providence, PA — Jun 2021 – Aug 2021

- Antibody-derived tag analysis: Used CITE-seq experiment data. Compared two normalization methods for single-cell sequencing; centered log ratio (CLR) and denoised and scaled by background (DSB). Provided feedback on the methods' performance and justification to using CLR. Proposed company-wide recommendations for the multi-omics pipeline; suggested methodological changes to the single-cell analysis pipeline (mixed effects model).
- Nearest neighbor analysis: Worked on tumor images, provided by Imaging Mass Cytometry technology, from 10 animals and 3 treatments. Investigated the compositional changes in tumor microenvironment due to treatment.

- Donor robustness test: Selected donors' responders by evaluating the quality of the data they produced. Made comparisons based on z-primes and different visualization plots (e.g., heat maps, assay windows plots). Received Global Employee Recognition award for my analysis.
- Sample size calculation: Performed ANOVA analysis with post hoc comparisons.
- Other: Performed statistical analyses using R, company's cluster, and GitHub.

Second Lieutenant, Cyprus National Guard, Cyprus May 2010 – Aug 2012

- Achieved the highest possible rank of a non-permanent member following nationwide cognitive and physical examinations.
- Directed a platoon and served as an instructor and trainer in army-related topics.
- Successfully completed my command tasks as a cadet: allocating liabilities, making decisions under pressure, quickly adapting to new situations, and working effectively as both a team player and an individual.

Publications

- Mean Shrinkage Estimation for High-Dimensional Diagonal Multivariate Natural Exponential Families. Nikolas Siapoutis, Donald Richards, and Bharath Sriperumbudur. Under review.
- Optimal and Non-Discriminative Rehabilitation Program Design for Opioid Addiction Among Homeless Youth. Amulya Yadav, Roopali Singh, Nikolas Siapoutis, Anamika-Barnman-Adhikari, Yu Liang, and Amandeep Singh. In *Proceedings of the 29th International Joint Conference on Artificial Intelligence (IJCAI)*, 2020.

Conferences

- International Symposium on Non-Parametric Statistics, Paphos, Cyprus, Invited Talk, June 2022.
- Joint Statistical Meeting, Online, Contributed Talk, August 2020.
- Rao Prize Conference, The Pennsylvania State University, Contributed Poster, May 2019.

Teaching Development

Conferences Attended

- UseR! 2024, Salzburg, July 2024.
- United States Conference on Teaching Statistics (USCOTS), State College, June 2023.
- The Present and Future of Statistics in Education, Cyprus Statistical Society, Online, April 2021.

Workshops Attended, Center for Teaching and Learning, University of Pittsburgh

- *Online Teaching using Canvas*, March 2025.
- *Faculty Office Hours: A Fresh Approach*, November 2024.
- *Introduction to Neurodiversity and Neuroinclusive Learning*, October 2024.
- *Introduction to ChatGPT Prompt Engineering for Teaching*, October 2024.
- *Top 5 Canvas Integrations for Course Innovation*, September 2024.
- *Teaching International Students*, March 2024.
- *Teaching With and Without PowerPoint*, February 2024.
- *Encouraging Student Participation*, January 2024.
- *Preventing and Managing Challenging Student Behaviors*, October 2023
- *Teaching the Artificial Student: AI and Pedagogy Workshop*, March 2023.
- *ChatGPT: The Evolution of Generative AI Tools and Implications for Teaching*, February 2023.
- *Developing a Lesson Plan*, January 2023.
- *Top Five Canvas Integrations for Course Innovation*, January 2023.
- *Fundamentals of Teaching Inclusively*, December 2022.
- *Practical Tools for Engagement and Belonging*, November 2022.
- *Top Hat as an Engagement-Building Tool in a Large Courses*, October 2022.

- *Gathering, Interpreting, and Using Midterm Student Feedback*, September 2022.
- *Designing Better Multiple-Choice Exam Questions*, August 2022.

Workshops Attended, Office for Equity, Diversity, and Inclusion, University of Pittsburgh

- *Inclusive Course Design Institute*, May 2024.
- *Excellence in Diverse Faculty Recruiting*, October 2023.

Workshops Attended, Pearson

- *Data Science as a General Education Course in the Undergraduate Curriculum*, September 2024.

Workshops Attended, TopHat

- *Transforming the Impact of Ed Tech with Cognitive Theory*, October 2023.
- *Teaching Distracted Minds with James Lang*, January 2023.

Workshops Attended, Consortium for the Advancement of Undergraduate Statistics Education (CAUSE)

- *A New Era of Learning: Considerations for ChatGPT as a Tool to Enhance Statistics and Data Science Education*, April 2025.
- *Generative AI for Data Science 101: Coding Without Learning To Code*, February 2025.
- *Philosophy within Data Science Ethics Courses*, October 2024.
- *Applets for Exploring Statistical Concepts for Teachers of Introductory and Intermediate Statistics, Part 1 and 2*, November 2023.
- *Re-purposing a Peer-reviewed Publication to Engage Students in Statistics: An Illustration of Study Design, Data Collection, and Analysis*, September 2023.

Workshops Attended, Schreyer Institute for Teaching Excellence, The Pennsylvania State University

- *How to Plan an Effective Class Session*, August 2020.
- *Teaching in a COVID-19 World*, August 2020.
- *Student Engagement, Building Community and Student Assessment Online*, August 2020.

Honors & Awards

First Place at 2025 Cheat-a-thon organized by The Pennsylvania State University — Mar 2025

- Awarded to faculty whose questions were the most difficult to answer using only generative AI tools.

The Pennsylvania State University Graduate Fellowship and Assistantship — Aug 2016 – Aug 2022

- Awarded full financial support for my graduate studies.

GlaxoSmithKline Global Employee Recognition — Aug 2021

- Recognized for my timely analysis that helped with donor sample selection.

Morphou Municipality Scholarship — Sept 2012 – Jun 2016

- Awarded a merit-based scholarship as a Cypriot undergraduate student.

Skills

- Software: R (Tidyverse), MATLAB, Minitab, SAS, Python, SQL, GitHub, LaTeX, MS Office.
- Languages: English, Greek.