

Patrick McHugh

mchugh.118@osu.edu

614-940-4046

1153 Virginia Ave, Columbus OH 43212

<https://www.linkedin.com/in/patrick-mchugh-050639109/>

Statistician / Data Scientist

EDUCATION

Ph.D., Statistics, The Ohio State University (in progress – began third year in August 2023)

August 2021 – Present (GPA: 3.83/4.00)

Coursework: Statistical principles and theory, measure theoretic probability theory and stochastic processes, causal inference, Bayesian statistics, computational statistics, experimental design, linear model theory, and more

Research: Pre-publication; working on Bayesian causal inference

Exams: Passed Qualifying Exam I (May 2022), Qualifying Exam II (August 2023) each on first attempt; pre-candidacy

Awards: Distinguished University Fellowship, Lubrizol Start-Up Fellowship

M.S., Statistics, The Ohio State University

August 2021 – December 2023

B.S., Data Analytics, The Ohio State University

August 2014 – May 2018 (Graduated *Summa Cum Laude*)

EXPERIENCE

Data Scientist

Battelle Memorial Institute, October 2020 – August 2021

As a data scientist on the Cybersecurity Trust and Assurance team at Battelle, a top-25 U.S. federal government contractor and the largest independent nonprofit applied science and technology organization in the world, my work included:

- Development of a patent-seeking optical image classification and analysis tool, used for cybersecurity purposes. The tool was built with convolutional neural networks, U-nets, and other machine learning devices. Development was done with Tensorflow and Keras in Python.
- Study, re-creation, and analysis of neural network poisoning attacks, in contract with a federal agency. Poisoning of several data types, including text, image, audio, video, graph, and others was analyzed. Work was primarily done in Python.
- Design and construction of a database containing information on cybersecurity-related concepts such as threats, attacks, countermeasures, etc. Work was done with the SQLAlchemy library in Python.
- Reception of an Outstanding Employee Award and financial bonus after my departure from Battelle for my contributions to the organization.

Chemical Abstracts Service, July 2018 – October 2019

I was hired after completing my undergraduate degree as a data scientist at CAS. Data science work included:

- Expansion of a patent similarity search engine to streamline patent-related R&D. The engine was a neural network based on word embeddings of patent documents. Work was done with PyTorch in Python.
- Development of a deep learning image classification model used to identify chemical compound images. Work was done with Tensorflow and Keras in Python.
- Statistical analysis of user feedback from search results to suggest search engine improvements. Work was done with regression modeling in R.

Data Engineer

Chemical Abstracts Service, October 2019 – October 2020

After about a year at CAS, I was transitioned into a data engineering role. Data engineering work included:

- Construction of a data pipeline parsing 70 million XML documents into a large relational database. The pipeline was built with Scala, Spark, and AWS EMR, and the database was hosted in AWS Athena.
- Development of a data pipeline feeding the previously mentioned patent similarity search engine. Work was done with Scala and Spark.

Statistics Instructor

Department of Statistics, The Ohio State University, August 2023 – Present

While working as a TA in the statistics PhD program at OSU, I was elevated to an instructor, and was tasked with instructing a statistics course of 180+ students (STAT 3450 – Basic Statistics for Engineers). Work included:

- Creative teaching and communication of statistical concepts to non-statisticians through design and delivery of two weekly lectures to students in a large course auditorium setting
- Design and delivery of exams and exam review materials
- Course administrative tasks such as managing teaching assistants, regular communication with the class as well as individual students, holding office hours twice weekly, creating a syllabus, grading, etc.

Statistics Teaching Assistant

Department of Statistics, The Ohio State University, August 2022 – August 2023

As a TA for the statistics department at OSU for two classes (STAT 1350 – Elementary Statistics and STAT 1430 – Statistics for the Business Sciences), my work included:

- Communication of statistical concepts to non-statisticians through creation and delivery of practice problems once or twice weekly in a recitation setting
- Development of a rapport with students via one-on-one and small group assistance in recitation
- Individual instruction of students in weekly tutoring hours
- Given an overall instructor rating by students between 4.8 and 4.98 (out of 5) in every class I've taught. I also have been rated higher in every class I've taught in each of nine sub-categories than department, college, and university average by students.

Other Work Experience

Identity Resolution Analyst – Global Data, Analytics, and Insights

Ford Motor Company (2017)

Research Assistant – Quantitative Investments

State Teachers Retirement System of Ohio (2015-2017)

OTHER ACTIVITIES

Assistant Coach

Boys and Girls Varsity Track and Field Team, Grandview Heights High School, January 2020 – Present

I coach track and field each winter/spring my free time. Highlights include:

- Building relationships with about 60 high school students participating each year
- Coaching of sprint events, relays, hurdles, and long jump
- Coaching the 2022 Ohio High School Division III State Champion in boys' long jump

Other Personal Activities/Interests

- I've volunteered with various organizations, including Run the Race Club, Holy Family Church Soup Kitchen, Franklin County Children Services, Star House Columbus, and others (July 2018-Present)
- I'm an avid sports fan and am currently attempting to participate in every intramural sport offered by OSU
- I've produced several short videos and one longer documentary video on topics of personal interest
- I have a strong interest in real estate