

GARY GUZZO

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EDUCATION

Master of Science, Applied Mathematics
Towson University, MD

May 2022
3.75/4.0 GPA

Bachelor of Science, Mathematics
Towson University, MD

May 2019
3.35/4.0 Major GPA

WORK EXPERIENCE

Systems Engineer, Northrop Grumman

June 2023 – Present

Derive linear program to optimize radar behavior. Use statistical and machine learning techniques on big data.

Adjunct Mathematics Faculty, Towson University

August 2022 – May 2023

University instructor for calculus I, statistics, and algebra. Wrote lectures and problem sets, graded, and held office hours.

Graduate Teaching Assistant, Towson University

January 2021 – May 2022

Held tutoring hours for real analysis, abstract algebra, and operations research. Graded assignments for calculus.

Simulation Test Engineer, CACI Inc. Aberdeen Proving Ground

June 2020 – December 2020

Analyzed radar systems and formulated their behaviors into data used for emitter testing.

Mathematics Tutor, Harford Tutoring Center

September 2016 – May 2020

Instructed students in courses ranging from algebra to differential equations, physics, and programming.

ACADEMIC PROJECTS

Data Assimilation for Chaotic and Stable Dynamical Systems

Fall 2021 – Spring 2022

Numerically solved the Lorenz system and the 2D heat equation and computed modified systems dependent on the originals. Built physics-informed and deep operator networks to learn the Lorenz and heat behaviors from the modified systems. Analytically proved convergence with notions from functional analysis and topology. Implemented in Python.

Two-Dimensional Navier-Stokes Equations

Spring 2021

Researched fluid dynamics and analytically solved the incompressible two-dimensional Navier-Stokes equations for pipe flow. Used finite-difference methods for obstacle and moving boundary problems. Implemented in Python and C.

Recurrent and Convolutional Neural Networks

Fall 2020

Built a nonlinear recurrent neural network that answered questions on text data. Built a convolution neural network that identified hand gestures from image data. Both networks achieved over 99% accuracy. Implemented in Python.

Function-Writing for Topics in Data Science

Fall 2019

Researched discrete convolution, radial basis function interpolation, and principal component analysis. Wrote Python functions to perform each process using only NumPy. Verified the processes via SciPy and SciKit Learn packages.

Topology Graduate Research Problem

Spring 2019

Researched the convergence of sequences in a topological space of functions to prove point-wise convergence. Used the results to prove the continuity of the evaluation map. Presented the proof orally to the topology professor.

COMAP International Mathematical Contest in Modeling

Winter 2019

Assembled and led a team that modeled the growth, development, and impacts of a hypothetical dragon population using analytical and empirical approaches. Earned an Honorable Mention, placing in the top 22% among over 14,000 teams.

Differential Geometry Surface Project

Fall 2018

Developed interactive *Mathematica* code which computed the tangent plane at any point on a surface, allowing the user to drag the dynamically updating tangent plane across the surface.

Disease Spread Model

Fall 2018

Modeled the spread of disease using stochastic processes that determined whether a given individual becomes infected on a given day. Implemented in Python and *Mathematica*.

Delivery Route Optimization

Spring 2018

Derived and solved linear program which optimized delivery routes, minimizing the distance traveled between any number of nodes under physical and capacity constraints. Implemented in Python, Java, and *Mathematica*.