# Tural Sadigov

## U.S. Permanent Resident

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## About me

Visiting Assistant Professor of Mathematics and Statistics with Ph.D. in Applied Mathematics and 7+ years experience in developing and teaching both mathematics and data-related courses such as various levels of Statistics, Machine Learning, Probability and Time Series Analysis (on Coursera) and mentoring undergraduate Machine Learning projects in Statistical Methods in Machine Learning course. Using R and RStudio extensively in all data-related course. Creator of R package stats2data (`https://github.com/turalsadigov/stats2data`) for Statistical Modeling and Applciations course at Hamilton College. Skills: Mathematics, Statistics, Machine Learning, Python, R, SQLite, Quarto, R Markdwon, LaTeX

## Current and Past Positions

**2020 -** Visiting Assistant Professor — Hamilton College
Teaching data science courses including Statistical Analysis of Data, Statistical Modeling and Its Applications and Statistical Methods in Machine Learning. Supervising students' machine learning projects. Morever, teaching other mathematics courses such as all levels of calculus, and doing research in the combination of Machine Learning and Applied Mathematics.

**2017 -** Coursera Instructor — Coursera
Teaching Practical Time Series Analysis

**2019 - 20** Statistics Lecturer — Hamilton College
Statistical Analysis of Data

**2015 - 20** Applied Mathematics Lecturer and Math Service Coordinator — SUNY Polytechnic Institute
Teaching applied mathematics and statistics courses such Applied Probability, Regression, Time Series Analysis, Linear Algebra, Calculus, Differential Equations. Both undergraduate and graduate level courses

## Education

**2008 - 15** Ph.D and MA, Applied Mathematics — Indiana University
Bloomington, IN

**2003 - 08** BS, Mathematics — Boğaziçi University
Istanbul, Turkey

## Data Science Skills

- Supervised/Unsupervised Machine Learning
- Data Wrangling, Cleaning, Preprocessing & Feature Engineering
- Time Series Analysis: ARIMA, SARIMA
- Statistical Inference
- Data Visualization
- Communication, reporting and dashboard: Quarto, R Markdown, Jupyter Notebook, R Shiny. Sample R Shiny web app: Link to the app

## Research Experience

**2020, 21** Summer Research Associate — Air Force Research Lab Griffis Institute
Rome, NY

## Awards/Grants

**2020, 21** Summer research grants (twice) — AFRL/GI

**2020, 21** Dean's Pedagogical Development Award (twice) — Hamilton College

**2018-19** SGU Award for Excellence in Teaching — SUNY Poly

**2003** Bronze Medal — International Mathematical Olympiad

**2000-03** Gold Medal (four times) — Azerbaijan Mathematical Olympiad

## Publications

1. Safety Prediction Model for Reinforced Highway Slope using a Machine Learning Method, 2020 (Link to the paper)
2. A Determining Form for the Subcritical Surface Quasi-Geostrophic Equation, 2019 (Link to the paper)
3. Determining form and data assimilation algorithm for weakly damped and driven Korteweg–de Vries equation — Fourier modes case, 2017 (Link to the paper)
4. A determining form for the damped driven nonlinear Schrödinger equation—Fourier modes case, 2015 (Link to the paper)

## Selected mentored ML projects

1. *Does Economic Development Predict Democratization?*, With Chiara Bondi, John Madigan (Methods: Regularized Regression Models (LASSO, Ridge, Elastic-Net)), 2022
2. *A Regularized Binomial Logistic Regression Approach to Cancer Classification Using Gene Expression*, Joshua Horowitz, Mukund Jayaran (Methods: Regularized Logistic Regression), 2022
3. Predicting Career Longevity of NBA Rookies, Margaret Phipps, Luke Devine (Methods: Support Vector Machines), 2021
4. Identifying Parkinson's Disease Through Speech Patterns, Ian Nduhiu, Lindsay Gearty (Methods: Support Vector Machines), 2021
5. Predicting Housing Rent Prices Using House Characteristics, Taron Kui, Iftikhar Ramnandan, Jenny Tran (Methods: Decision Trees, Bagged Models, Random Forest), 2021
6. How Race, Income, and Education Relate to Inter- net Access in US Counties, Lindsay Gearty, Margraet Phipps (Methods: Multiple Polynomial Regression, Forward/Backward Variable Selection), 2021

## Selected data-related talks

1. Theoretical Analysis of Artificial Neural Network solutions to the damped, driven Korteweg de-Vries equation, AMS Special Session, 2022
2. Support Vector Machines, CUNY - Hunter College, 2021
3. Model Selection & Validation in Machine Learning, CUNY - Hunter College, 2021
4. Support Vector Machines: Overview and Applications, CUNY - Hunter College, 2020
5. Support Vector Machines: Overview and Applications, Hamilton College, 2020
6. Stochastic Calculus: Ito Integrals and Stochastic Differential Equations, SUNY Poly, 2019
7. Stochastic Processes, Markov Chain and Brownian Motion, SUNY Poly, 2019
8. A gentle introduction to Stochastic Processes, SUNY Poly, 2019