



# Tural Sadigov

U.S. Permanent Resident

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## About me

Staff Data Scientist with Ph.D. in Applied Mathematics and 8+ years experience in developing data products such as machine learning models, APIs that serve these models, webapps/dashboards that use various data pipelines and APIs in the backend, as well as, teaching applied mathematics and data-related courses such as various levels of Statistics, Machine Learning, Probability and Time Series Analysis (on Coursera). Have been mentoring undergraduate Machine Learning projects in Statistical Methods in Machine Learning course, and colleagues in industry on data science and DevOps practices. Using Python/R/Git extensively in daily routine. Creator of a private Python package at Sepion and public R package stats2data for the Statistical Modeling and Applications course at Hamilton College.

## Positions

- 2023 - Staff Data Scientist (since February, 2023) Sepion Technologies  
Actively involved in multiple data-related domains, such as Data Science, Data Engineering, DevOps, Software Development, and Machine Learning. Working within the Cell Engineering R&D team and collaborating with the whole R&D team, Cell Process team, Cell Fabrication team, Cell Testing team, and Computational Chemistry subgroup. Leading a project focused on creating and managing the PostgreSQL database, as well as developing custom web applications that use the database. Additionally, spearheading the Connect project, which involves spinning and maintaining the server to which we deploy various data products such as APIs, Machine Learning models, Web Apps, and scheduled reports. Working on internal tools to aid scientists throughout the data lifecycle, from collection to visualization to analysis. Creating and automating scripts to pre-process data for ML modeling, training and deploying ML models. Developing internal Python packages. Mentoring colleagues in data science, statistics and DevOps practices in addition to applying machine learning and applied mathematics to inform chemical product development and experimental designs. Successfully saved at least 172K on the company budget through negotiation analysis.
- 2020, 21 Research Associate Air Force Research Lab Griffis Institute  
Proved the existence of theoretical neural network solutions for differential equations, and designed and implemented numerical algorithms in Python to solve partial differential equations.
- 2020 - 23 Visiting Assistant Professor Hamilton College  
Redesigned series of data science courses such as Statistical Analysis of Data, Statistical Modeling and Its Applications and Statistical Methods in Machine Learning by incorporating heavy coding into lectures, assessments and projects, and actively participated in data science initiatives of Hamilton College where one such initiative resulted in a data science major. Successfully engaged students in Machine Learning projects. Played a crucial role in increasing the number of majors in mathematics and data science
- 2017 - Coursera Instructor Coursera  
Practical Time Series Analysis
- 2015 - 20 Applied Mathematics Lecturer and Math Service Coordinator SUNY Polytechnic Institute  
Promoted data analysis certificate by delivering technical lectures in various statistics and applied mathematics courses such as Applied Probability, Regression, and Time Series Analysis at undergraduate and graduate levels. .

## Education

- 2008 - 15 Ph.D and MA, Applied Mathematics Indiana University Bloomington, IN
- 2003 - 08 BS, Mathematics Boğaziçi University Istanbul, Turkey

## Skills

- Python, R, SQL, Docker, GitHub Actions, Alembic, Git
- AWS S3, AWS EC2, AWS Cognito
- Machine Learning Modeling via tidymodels and scikit-learn
- Software Development and Deployments
- Streamlit, Shiny for R, Shiny for Python, HTML, CSS
- Supervised/Unsupervised Machine Learning
- Data Wrangling, Cleaning, Preprocessing & Feature Engineering
- Time Series Analysis: ARIMA, SARIMA (Coursera Course)
- Statistical Inference

- Data Visualization (altair, ggplot, seaborn, matplotlib, plotnine)
- Communication, reporting and dashboard: Quarto, R Markdown, Jupyter Notebook, R Shiny. Sample R Shiny web app: [Link to the app](#)

## Awards

- Summer research grants, Air Force Research Lab/Griffis Institute, 2021-22 (\$36000)
- Dean's Pedagogical Development Awards, Hamilton College, 2021-22 (\$4500)
- Teaching Grant from Herkimer College and Hamilton College for teaching Financial Mathematics, 2022 (\$10000)
- SGU Award for Excellence in Teaching, SUNY Poly, AY 2018-19
- Bronze Medal, 44th International Mathematical Olympiad, Tokyo, Japan, 2003
- Gold Medal, Azerbaijan Mathematical Olympiad, 2003
- Gold Medal, Azerbaijan Mathematical Olympiad, 2002
- Gold Medal, Azerbaijan Mathematical Olympiad, 2001
- Gold Medal, Azerbaijan Mathematical Olympiad, 2000

## Publications

1. Safety Prediction Model for Reinforced Highway Slope using a Machine Learning Method, 2020 ([Link to the paper](#))
2. Determining form and data assimilation algorithm for weakly damped and driven Korteweg–de Vries equation — Fourier modes case, 2017 ([Link to the paper](#))

## Mentored 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 Internet Access in US Counties, Lindsay Gearty, Margraet Phipps (Methods: Multiple Polynomial Regression, Forward/Backward Variable Selection), 2021

## 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