

## Tural Sadigov, Ph.D. - Permanent Resident of the US

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### CONTACT INFORMATION

#### **Institutional address**

Mathematics and Statistics Department  
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245 Oxford Rd, Apt 31G  
New Hartford, NY 13413  
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### EDUCATION

#### **Department of Mathematics, Indiana University, Bloomington/Indiana**

Ph.D. in Applied Mathematics, July 2015

- Dissertation Title: *Data assimilation and determining forms for weakly damped, dispersive systems*

#### **Department of Mathematics, Indiana University, Bloomington/Indiana**

M.A. in Mathematics, March 2015

#### **Department of Mathematics, Bogazici University, Istanbul/Turkey**

B.S. in Mathematics, June 2008

### CURRENT POSITION

Visiting Assistant Professor of Mathematics and Statistics at Hamilton College, July 2020 - Present

### PREVIOUS POSITIONS

AFRL/RI Visiting Faculty Research Program **Summer Research Associate**, May 31st, 2021- August 8th, 2021

AFRL/RI Visiting Faculty Research Program **Summer Research Associate**, June 2020 - August 2020

Statistics Lecturer at Hamilton College, August 2019 - May 2020

Applied Mathematics Lecturer at SUNY Polytechnic Institute, August 2015 - May 2020

Math Service Coordinator at SUNY Polytechnic Institute, June 2019 - May 2020

Associate Instructor at Indiana University, 2008 - 2015

CURRENT RESEARCH INTERESTS	Data-driven model discovery, Machine Learning, Deep Learning, Dynamical Systems, Probability, Statistics, Time Series Analysis, Stochastic Processes
PUBLICATIONS PROJECTS	<p>Asif Ahmed, Sadik Khan, Sahadat Hossain, Tural Sadigov, Prabesh Bhandari, <i>Safety Prediction Model for Reinforced Highway Slope Using Machine Learning Method</i>, Journal of Transportation Research Record (TRB/TRR), June 9, 2020, - (Link to the paper)</p> <p>Michael S. Jolly, Vincent Martinez, Tural Sadigov and Edriss S. Titi, <i>A determining form for the subcritical surface quasi-geostrophic equation</i>, Journal of Dynamics and Differential Equations (JDDE), <b>31</b> (2019), 1457-1494, <a href="https://doi.org/10.1007/s10884-018-9652-4">https://doi.org/10.1007/s10884-018-9652-4</a> - (Link to the paper)</p> <p>Michael S. Jolly, Tural Sadigov and Edriss S. Titi, <i>Determining form and data assimilation algorithm for damped and driven Korteweg de Vries equation- Fourier modes case</i>, Nonlinear Analysis: Real World Applications, <b>36</b> (2017), 287-317 - (Link to the paper)</p> <p>Michael S. Jolly, Tural Sadigov and Edriss S. Titi, <i>A determining form for the damped driven Nonlinear Schrodinger Equation-Fourier modes case</i>, Journal of Differential Equations, <b>258(8)</b> (2015), 2711-2744. - (Link to the paper)</p> <p>Group work at MPI in New Jersey Institute of Technology, <i>Spatial Pattern Formation in Fused Silica Under UV Radiation</i>, (2014) - (Link to the report)</p>
WORKS IN PROGRESS	<p>Michael S. Jolly, Joseph Raquepas, Tural Sadigov, <i>A computational study of data assimilation algorithm for damped and driven Korteweg de Vries equation</i>, Effort sponsored by the Air Force under MOU FA8750-15-3-6000.</p> <p>Joseph Raquepas, Tural Sadigov, <i>Discovering finite dimensionality via Machine Learning in semi-dissipative, dispersive systems</i>, Effort sponsored by the Air Force under MOU FA8750-15-3-6000.</p> <p>Andrew Dianetti, Mark Harrington, Joseph Raquepas, Tural Sadigov, <i>Artificial Neural Network solutions to damped and driven Korteweg de Vries equation</i>, Effort sponsored by the Air Force under MOU FA8750-15-3-6000 and MOU FA8750-19-3-1000.</p> <p>Tural Sadigov, Süleyman Ulusoy, <i>Forward and Inverse Neural Network solutions to damped and driven Nonlinear Schrödinger equation</i></p>

HONORS  
GRANTS  
AWARDS

2021	Summer Reserach Grant from AFRIL/RI through Griffis Institute
2020	Extension Reserach Grant from AFRIL/RI through Griffis Institute
2020	Summer Reserach Grant from AFRIL/RI through Griffis Institute
2018-2019	Student Government at Utica Award for <b>Excellence in Teaching</b>
2016	Teaching Grant from Coursera
Before being faculty	
2008-2015	Full-Scholarship for Graduate study Indiana University Graduate School of Arts and Sciences
2003-2008	Full-Scholarship for undergraduate study Bogazici University, School of Arts and Sciences
2008	Honor Student in Mathematics at Bogazici University
2003	Bronze medal in 44th International Mathematical Olympiads ( <b>IMO 2003</b> )- (Link to IMO2002 and IMO2003 results)
2003	Gold medal in Azerbaijan Republic Mathematical Olympiad
2002	Participation in 43rd International Mathematical Olympiads ( <b>IMO 2002</b> )- (Link to IMO2002 and IMO2003 results)
2002	Gold medal in Azerbaijan Republic Mathematical Olympiad
2001	Gold medal in Azerbaijan Republic Mathematical Olympiad
2000	Gold medal in Azerbaijan Republic Mathematical Olympiad

INVITED  
TALKS

- 2021      The Data Science Initiatives at Hamilton College, 2021 National Workshop on Data Science Education, Organized by the Division of Computing, Data Science, and Society at UC Berkeley, San Francisco, CA (June 17)
- 2021      A computational study on data assimilation algorithm for damped, driven Korteweg de-Vries equation, Assured Information Security, Inc., Rome, NY (March 4)
- 2021      Support Vector Machines, CUNY - Hunter College, New York City, NY, CUNY Graduate Center, Learning Seminar in Machine Learning (Zoom - Recording available as MP4 file [Link to the seminar page](#) - January 29)
- 2020      Model Selection & Validation in Machine Learning, CUNY - Hunter College, New York City, NY, CUNY Graduate Center, Learning Seminar in Machine Learning (Zoom - Recording available as MP4 file - [Link to the seminar page](#) - December 11)
- 2020      Support Vector Machines: Overview and Applications, CUNY - Hunter College, New York City, NY, CUNY Graduate Center, Applied Mathematics Seminar (Zoom - [Link to the seminar page](#) - [Link to the Zoom recording](#) - October 15)
- 2020      A computational study on data assimilation algorithm for damped, driven Korteweg de-Vries equation, CUNY - Hunter College, New York City, NY, CUNY Graduate Center, Harmonic analysis & PDE Seminar (Zoom - [Link to the seminar page](#) - [Link to the abstract](#) - October 9)
- 2020      Support Vector Machines: Overview and Applications, Hamilton College, Clinton, NY, Colloquium Talk (February 10)
- 2019      Construction of determining forms for dissipative/semi-dissipative differential equations, "Analysis and Applications of Deterministic and Stochastic Evolution Equations" session at AMS Fall Sectional Meeting, Binghamton University, NY (October 13)
- 2019      Introduction to Stochastic Processes: Theory, Applications, and Simulations, Hamilton College, Clinton, NY, Colloquium Talk (April 9)
- 2015      Data assimilation algorithm for damped, driven Korteweg de-Vries equation, SUNY Polytechnic Institute, NY (April 13)
- 2013      The determining form for the 1D damped driven nonlinear Schrödinger equation, "Global Attractors, Dissipative Dynamical Systems, and Turbulence" session at SIAM Conference on Analysis of Partial Differential Equations, SIAM Conference, Orlando, FL (December 7-10)

CONFERENCE ACTIVITY / PARTICIPATION	2021	United States Conference on Teaching Statistics (USCOTS), Expanding Opportunities, Virtual conference, Online (June 28 - July 1)
	2021	2021 National Workshop on Data Science Education, UC Berkeley, Virtual workshop, Online (June 14 - 18)
	2021	Matery Grading Conferences (University STEM Focus), Online (June 11 - 12)
	2021	East Coast Optimization Meeting (ECOM), Webinar, Online (April 1 - 2)
	2020	SIAM Conference on Mathematics of Data Science (MDS20), Webinar, Online (May 4 - June 30)
	2019	AMS Fall Eastern Sectional Meetings, Binghamton University, Binghamton, NY (October 12-13)
	2019	Open Educational Resources Course Design Workshop, Monroe Community College Downtown, Rochester, NY (June 10 -11)
	2019	Open Educational Resources Workshop, Buffalo State College, Buffalo, NY (March 9 )
	2016	Dynamics and Differential Equations, IMA, University of Minnesota, Minneapolis, MN (June)
	2016	Challenges in Non - Equilibrium Statistical Physics and Fluid Dynamics, Brigham Young University, Provo, Utah (May)
	2014	Mathematical Problems of Industry, New Jersey Institute of Technology, Newark, NJ
	2014	Graduate Students Math Modeling Camp, Rensselaer Polytechnic Institute,Troy, NY
	2014	IMA Special Workshop: Careers and Opportunities in Industry for Mathematical Scientists, University of Minnesota, Minneapolis, MN
	2013	72nd Midwest PDE Seminar, West Lafayette, IN
	2013	Clifford Lectures, Tulane University, New Orleans, LA
	2013	SIAM Conference on Analysis of Partial Differential Equations, Orlando, FL
	2012	AMS Spring Central Section Meetings, the University of Kansas, Lawrence, KS
	2012	NSF Workshop on the BEM: Bridging Education and Industrial Applications, University of Minnesota, Minneapolis, MN
	2011	Incompressible Fluids, Turbulence and Mixing: In honor of Peter Constantin's 60th Birthday, Pittsburgh, PA, Attendee

OTHER TALKS	2019	Stochastic Calculus: Ito Integrals and Stochastic Differential Equations, A series of talks hosted by Math Club, SUNY Polytechnic Institute (February 8)
	2019	Stochastic Processes, Markov Chain and Brownian Motion, A series of talks hosted by Math Club, SUNY Polytechnic Institute (February 1)
	2018	A gentle introduction to Stochastic Processes, A series of talks hosted by Math Club, SUNY Polytechnic Institute (December), (Youtube link of the talk)
	2017	Data science, Probability and Statistics, Utica BOCES, Utica, NY (March)
	2016	Determining form for the subcritical Surface Quasi- Geostrophic equation, Minneapolis, MN
	2014	The final report of Spatial Pattern Formation in Fused Silica Under UV Radiation, New Jersey Institute of Technology (June 23-27)
	2014	Workshop on Study of Turbulence in Physical Systems Through Complex Singularities and Determining Modes, College Station, TX, Contributed Talk (January)
	2013	Workshop on Study of Turbulence in Physical Systems Through Complex Singularities and Determining Modes, Indiana University, IN, Contributed Talk (February)
	2012	Workshop on Study of Turbulence in Physical Systems Through Complex Singularities and Determining Modes, College Station, TX, Contributed Talk (February)

TEACHING  
EXPERIENCE

**Coursera platform (Link to the course):**

Practical Time Series Analysis (R - ONLINE)

**Hamilton College (Link to the course descriptions):**

MAT 116, Calculus II (Fall 2021)  
MAT 152, Statistical Analysis of Data (R)  
MAT 216, Multivariable Calculus  
MAT 254, Statistical Modeling and Applications (R)  
MAT 356, Statistical Methods in Machine Learning (Project-based course, R)

**SUNY Polytechnic Institute**

(Link to undergraduate mathematics course descriptions, Link to graduate mathematics course descriptions):

MAT 151, Calculus I - Differential Calculus  
MAT 152, Calculus II - Integral Calculus  
MAT 230, Differential Equations with Modeling Applications  
MAT 253, Calculus III - Multivariable Calculus (Geogebra)  
MAT 280, Linear Algebra (MATLAB)  
MAT 335, Mathematical Modeling (Python)  
MAT 370, Applied Probability (R)  
MAT 420, Complex Variables and Their Applications  
MAT 425, Real Analysis [**Flipped Classroom**]  
MAT 450, Partial Differential Equations  
MAT 471, Time Series Analysis and Its Applications (R)  
MAT 490, Special Topics: Nonlinear Partial Differential Equations  
MAT 505, Introduction to Probability (R)  
MAT 550, Time Series Analysis (R)  
STA 510, Regression and Analysis of Variance (R)

**Indiana University (Bloomington) - teaching, grading, assisting**

(Link to undergraduate mathematics course descriptions), Link to graduate mathematics course descriptions:

MATH-M 25, M 27, Precalculus Mathematics, Trigonometry  
MATH-D 116, D 117, Finite Mathematics I, II  
MATH-M 118, Finite Mathematics  
MATH-M 119, M 120, Brief Survey of Calculus I, II  
MATH-M 211, M 212, Calculus I, II  
CSCI B 401, Fundamentals of Computing Theory, (Link)  
MATH-M 471, Numerical Analysis I  
MATH-M 542, Nonlinear Partial Differential Equations  
MATH-M 572, Analysis of Numerical Methods II

TEACHING  
VIDEO  
SAMPLES

Seminar talk - YouTube  
Coursera video 1  
Coursera video 2  
Machine Learning - Blended class - SVM  
Multivariable Calculus - Fully Zoom - Optimization  
Multivariable Calculus - Blended class - Optimization

SELECTED  
MACHINE  
LEARNING  
PROJECTS  
SUBMITTED TO  
USCLAP

Margaret Phipps, Luke Devine, *Predicting Career Longevity of NBA Rookies*, Statistical Methods in Machine Learning Project 4 (Support Vector Machines), Spring 2021

Ian Nduhiu, Lindsay Gearty, *Identifying Parkinson's Disease Through Speech Patterns*, Statistical Methods in Machine Learning Project 4 (Support Vector Machines), Spring 2021

Taron Kui, Iftikhar Ramnandan, Jenny Tran *Predicting Housing Rent Prices Using House Characteristics*, Statistical Methods in Machine Learning Project 3 (Decision Trees, Bagged Models, Random Forest), Spring 2021

Mark Harrington, Lindsay Gearty, *Crime Scene Glass Identification*, Statistical Methods in Machine Learning Project 3 (Decision Trees, Bagged Models, Random Forest), Spring 2021

Maddy LaPoint, Denzel Capellan, *Predicting Malignancy of Breast Cancer Tumors by Physical Measurements and Qualities*, Statistical Methods in Machine Learning Project 3 (Decision Trees, Bagged Models, Random Forest), Spring 2021

Maddy LaPoint, Brian Li, *Predicting Company Bankruptcy in Taiwan Based on Economics Statistics*, Statistical Methods in Machine Learning Project 2 (Regularization), Spring 2021

Kara Mathes, Iftikhar Ramnandan, *The Effects of Calories on Serving Size*, Statistical Methods in Machine Learning Project 2 (Regularization), Spring 2021



SELECTED  
UNDERGRADUATE  
CLASS  
PROJECTS  
MENTORED

Lindsay Gearty, Margraet Phipps, *How Race, Income, and Education Relate to Internet Access in US Counties*, Statistical Methods in Machine Learning Project 1, Spring 2021, **Presented at HRUMC 2021**

Margrate Phipps, Denzel Capellan, *Classifying Adults for High Risk of Heart Attack Using Biological Indicators*, Statistical Methods in Machine Learning Project 3, Spring 2021

Taron Kui, Jenny Tran, *Assesing Student Performance Based on Family Demographics*, Statistical Methods in Machine Learning Project 2, Spring 2021

Lindsay Gearty, Theo Simson, *Predicting heart Failure Patient Survival*, Statistical Methods in Machine Learning Project 2, Spring 2021

Rachael DeBernardis, Bridgette Howard, *Time Series Analysis of Unemployment Rates and Home Ownership Percentages*, Time Series Analysis Final Project, Fall 2019

Kristen Jordan, M'Kenzie Bradshaw, *Predicting Betting Percentages Of Baseball Players Using Decision Tree Regression and Multivariable Regression*, Applied Probability Final Project, Spring and Fall 2019

David Petrushenko, Tyler Taverne, *A Probability Study on Points Scored in an NBA Basketball Game*, Applied Probability Semester-long Project, Spring 2018

Tristen Carrig, Alex Khoun, *Prediction Model of Pepsico Stock Prices*, Applied Probability Semester-long Project, Spring 2018

Sean McSharar, Craig Sexton, *Statistical Analysis of Stopping Time*, Applied Probability Semester-long Project, Spring 2018

Philip D'Angelo, Matthew Ramsey, *Modeling the Amount of Money Spent at Walmart*, Applied Probability Semester-long Project, Spring 2018

Von Clarke, Patrick Mohan, *Autoregressive Models for Nintendo, SONY and Microsoft Stocks*, Applied Probability End of The Semester Project, Spring 2017

Chris Indolfi, Douglas Nedza, *Contrast Enhancement Using Histogram Equalization*, Applied Probability End of The Semester Project, Fall 2016

REFEREED  
JOURNAL

European Journal of Mechanics / B Fluids  
Communications in Nonlinear Science and Numerical Simulation

SERVICE

**Hamilton College**

Spring 2021 Mathematics and Engineering Committee Member at Global Azerbaijani Scholars Association (GASA)  
Spring 2021 Judge for the Undergraduate Statistics Project Competition  
Fall 2020 Proctoring Tompkins Prize Exam  
Fall 2020 Participating in QSR Director Interview  
Fall 2020 Participating in MSSG Spring Program in Data Science Overview and Q&A Session (Guanajuato, Mexico)

**SUNY Polytechnic Institute**

2019/20 Authoring Math Placement Test Report, Authoring Calculus-1 Report, Chair of Hiring Committee for Adjunct Lecturer position in Mathematics, Faculty Chat With Students at Residential Services (SUNY Poly), University wide committee member for Student Success  
2018/19 University wide committee member for Lecturer Promotion, Created two new courses on Time Series Analysis (MAT 471 and STA 471), Departmental committee member for Open Educational Resources (OER)  
2017/18 Departmental committee member for Mathematics Minor requirements, Search Committee member for Tenure-track Assistant Professor Position in Civil Engineering Technology,  
2016/17 Departmental peer review committee member for reappointment of Dr. Wenfeng Chen

COMMUNITY  
INVOLVEMENT  
OUTREACH

2020 Live Facebook panel discussion on data analytics with Azerbaijani audience, Video link  
2019 Faculty Chat at Mohawk Residence Hall and Office of Residential Life & Housing (November 15 - Link)  
2017 Data Science, Probability and Statistics, Lecture at Utica BOCES (March 22)  
2016 Judge at Annual Science Fair at the Utica Academy of Science Charter School (March 19)  
2011 Teaching at IUPUI Upward Bound program (June 27 - July 15)

COURSES PREPARED TO TEACH AT HAMILTON COLLEGE	Statistical Analysis of Data Statistical Modeling and Applications Probability Theory and Applications Statistical Theory and Computation Mathematics of Machine Learning Statistical Methods in Machine Learning Calculus 1 Calculus 2 Calculus 3 Linear Algebra Differential Equations Differential Equations 2 Real Analysis Complex Analysis Partial Differential Equations Senior Seminar in Mathematical Modeling Senior Seminar in Statistics Senior Seminar in Dynamics Senior Seminar in Applied Probability
PROGRAMMING SKILLS	R, R Studio Python
LANGUAGES	English - Fluent Turkish - Fluent Azerbaijani - Native
PROFESSIONAL AFFILIATIONS	2021                      Global Azerbaijani Scholars Association ( <a href="#">Link</a> )
REFERENCES	<p><b>Andrew Russell</b>, Dean of College of Arts and Sciences, SUNY Polytechnic Institute, <a href="mailto:russelal@sunypoly.edu">russelal@sunypoly.edu</a>, (315) 792-7317</p> <p><b>Edmond Rusjan</b>, Associate Professor of Mathematics, Chair and Program Coordinator of Applied Mathematics, SUNY Polytechnic Institute, <a href="mailto:edmond@sunypoly.edu">edmond@sunypoly.edu</a>, (315) 792 - 7394</p> <p><b>William J. Thistleton</b>, Associate Professor of Mathematics, Program Coordinator Advanced Certificate in Data Analysis, SUNY Polytechnic Institute, <a href="mailto:thistlet@sunypoly.edu">thistlet@sunypoly.edu</a>, (315) 792 - 7508</p> <p><b>Michael S. Jolly</b>, Professor of Mathematics, Department of Mathematics, Indiana University, <a href="mailto:msjolly@indiana.edu">msjolly@indiana.edu</a>, (812) 855 - 8865</p> <p><b>Vincent R. Martinez</b>, Asistant Professor of Mathematics, Department of Mathematics and Statistics, Hunter College of CUNY, <a href="mailto:vmartinez@hunter.cuny.edu">vmartinez@hunter.cuny.edu</a>, (212) 772-5791</p>