

CONTACT INFORMATION	Don Myers 214 Department of Mathematics and Statistics American University Washington, DC 20016 USA <i>E-mail:</i> barouti@american.edu
ACADEMIC APPOINTMENT	American University , Washington, DC USA <i>Director of the Online Data Science Masters Degree Program</i> January 2023 - Present <i>Interim Director of the Online Data Science Masters Degree Program</i> June - December 2022 <i>Sr.Professorial Lecturer</i> September 2021 - Present <i>Associate Director of the Data Science Programs</i> January 2020 - Present <i>Professorial Lecturer</i> September 2016 - September 2021
EDUCATION	University of Maryland Baltimore County (UMBC) , Baltimore, Maryland USA Ph.D. in Applied Mathematics, August 2016 - Dissertation Topic: “ Clustering for Monitoring Distributed Data Streams” - Advisers: Dr. J. Kogan and Dr. Y. Malinovsky M.S., Applied Mathematics, August 2013 Rochester Institute of Technology (R.I.T) , Rochester, New York USA M.S., Applied and Computational Mathematics, August 2011 - Master Thesis: “ Computing Hilbert Functions using the Syzygy and LCM-lattice methods” - Advisor: Dr. Manuel Lopez University of Patras , Patras, Greece B.S., Mathematics, September 2008 - Degree Thesis: “ An Introduction to Gröbner Bases” - Advisor: Dr. Andreas Arvanitoyeorgos
RESEARCH INTERESTS	Data Mining, Mathematical Statistics, Numerical Optimization, Machine Learning.
CERTIFICATES	American University , Washington, DC USA <i>Certificate of Completion of the Training Course in Online Learning</i> , Spring 2017 - Awarded by the Center for Teaching, Research and Learning (CTRL)
ACADEMIC GRANTS/AWARDS	Office of Academic Affairs, American University Curriculum Development of a Q2 (STAT 312) course in data science. PI: Maria Barouti, Jane Wall, Michael Robinson (\$1500) May 2019 - June 2020 Role: Provide summer support for the three lead faculty members to develop the modules for the course. Fall 2019 CAS Faculty Mellon Fund, American University Data Analysis, Visualization, and Knowledge Discovery for Early Detection of Child Victimization. PI: Maria Barouti, Zois Boukouvalas, Nathalie Japkowicz, Alex Godwin, Alexandra Kapatou, Jane Wall, Toks Fashola, Mary W. Gray, Nimai Mehta (\$4000) November 2019 - November 2020

Role: Provide summer support to graduate and undergraduate students to work on the proposed tasks under the guidance of the faculty above.

TEACHING EXPERIENCE

American University, Washington, DC USA

Course Development

Wrote a proposal for new curriculum for Data 312. This course serves as an AU core quantitative literacy course in data science and covers data visualization, text analysis and comparison, music analysis, and an introduction to machine learning and the associated ethical considerations.

- DATA 312, Data Science Applications.

Teaching

Create class curriculum and syllabus that is appropriate for class being taught. Provide students with the necessary resources and materials to help them understand the course content. Ensure students are assisted in developing personally and professionally.

- DATA 793, Data Science Practicum, Spring/Fall 2021, Spring/Fall 2022, Spring 2023.
- STAT 412/612, Statistical Programming in R, Spring 2021.
- STAT 427/627, Statistical Machine Learning, Spring/Fall 2019, Spring/Summer/Fall 2020, Fall 2021.
- STAT 415/615, Regression, Spring/Summer 2020, Spring 2021.
- MATH 222, Calculus II, Fall 2018.
- MATH 160, Applied Precalculus, Spring 2018/Spring 2019.
- STAT 202, Basic Statistics, Spring 2016, Spring/Summer 2017, Spring/Summer 2018, Summer/Fall 2019.
- MATH 151, Finite Mathematics, Fall 2017.
- MATH 150, Finite Mathematics, Spring 2017.
- MATH 170, Precalculus, Fall 2016, Fall 2018, Fall 2020.
- MATH 221, Calculus I, Fall 2016, Summer 2018.

DC Math Circle

Instructor/Visitor

September 2017 - December 2019

Build on students excitement about mathematics by encouraging them to express their passion through games, stories, or hands-on activities. Discuss and think about challenging problems together in a social context.

Adjunct Instructor

- STAT 202, Basic Statistics, Spring 2016.

University of Maryland Baltimore County, Baltimore, Maryland USA

Math Instructor

- MATH 151, Calculus I, Spring/Summer 2016.
- MATH 155, Applied Calculus, Summer 2013/2014/2015.

Math Teaching Assistant

August 2012 - May 2016

Head teaching assistant. Duties included mini lectures and worksheet preparation, shared administrative responsibilities with faculty instructor, fielding of all student inquiries, provide assistance with calculus-related questions, and grade weekly quizzes for over 100 students.

Courses: MATH 150 Precalculus, MATH 155 Applied Calculus, MATH 151 Calculus and Analytic Geometry I, MATH 152 Calculus and Analytic Geometry II. .

Math Gym Coach

August 2013 - May 2015

Participate in an active learning environment, engaging students in manipulating knowledge. Additional duties included office hours and grading problems for various levels of courses.

Courses: Precalculus, Applied Calculus, Calculus and Analytic Geometry I,II, and Multivariate Calculus.

Orientation Advisor

Summer/Winter 2014/2015/2016

Provide assistance in the overall provision of academic advising and registration assistance to the entirety of UMBC's entering undergraduate population.

Math Grader

Summer 2012

Grade homework problems for over 35 students.

Course: Finite Mathematics for Information Sciences.

Rochester Institute of Technology, Rochester, New York USA

Math Teaching Assistant

August 2009 - May 2011

Provide assistance with calculus-related questions and grade homework problems for over 30 students.

Courses: Project Based Calculus I, II, III, Calculus A, B, C.

University of Patras, Patras, Greece

High School Math Tutor

October 2004 - May 2009

Responsible for tutoring high school students in various mathematics courses and responsible for preparing them for the Panhellenic Examinations in Greece.

Courses: Mathematics (Calculus), Euclidean Geometry, Analytic Geometry, Algebra, Trigonometry.

PUBLICATIONS

M. Barouti. "A Novel Approach for Computing Hilbert Functions", arXiv preprint arXiv:1812.01757 (2018).

M. Barouti, D. Keren, J. Kogan and Y. Malinovsky. "Clustering for Monitoring Distributed Data Streams", in *Partitional Clustering Algorithms*, M. Emre Celebi (eds.), Springer, pp. 387-415, 2015.

M. Barouti, D. Keren, J. Kogan and Y. Malinovsky. "Monitoring Distributed Data Streams Through Node Clustering". In *proceedings of the International Conference on Machine Learning (MLDM'2014)*, July 21-24, 2014, St. Petersburg, Russia. Springer-Verlag Lecture Notes in Computer Science, Lecture Notes in Artificial Intelligence (LNAI), pp. 149-162.

M. Barouti, D. Keren, J. Kogan and Y. Malinovsky. "Adaptive Clustering for Monitoring Distributed Data Streams". In *proceedings of the Workshop on Exploratory Data Analysis*, (held in conjunction with the 2014 SIAM International Conference on Data Mining, April 24-26, Philadelphia, PA). SIAM, Philadelphia, pp. 13-16.

INVITED TALKS

DCPS Summer Professional Development Workshop, Math/Stat and Physics Departments, American University, Washington, DC, August 2022.

Statistics and Data Science for a Better World, Virtual 63rd ISI World Statistics Congress, July 2021.

DCPS Summer Professional Development Workshop, Math/Stat and Physics Departments, American University, Washington, DC, July 2021.

Women in STEM, Her Campus American University, Washington, DC, November 2017.

Clustering for Monitoring Distributed Data Streams, Math/Stat Department Colloquia, American University, Washington, DC, October 2016.

Monitoring Distributed Data Streams through Node Clustering, UMBC Graduate Research Association (GRC), Baltimore MD, March 2015.

Adaptive Clustering for Monitoring Distributed Data Streams, 2014 SIAM International Conference on Data Mining, Philadelphia, PA, April 2014.

Deblurring Images, Matrices, Spectra, and Filtering, UMBC Graduate Student Seminar, Baltimore MD, March 2013.

Modeling and Optimization of QEPAS sensors, MIRTHE Summer Workshop, University of Maryland, Baltimore County, Baltimore MD, Aug. 2012.

Modeling Quartz-Enhanced Photoacoustic Spectroscopy (QEPAS) Sensors, UMBC Graduate Student Seminar, Baltimore MD, Feb. 2012.

POSTERS

Adaptive Clustering for Monitoring Distributed Data Streams, 2014 SIAM International Conference on Data Mining, Philadelphia, PA, April 2014.

Modeling and Optimization of QEPAS sensors, MIRTHE Site Visit, Princeton University, Princeton NJ, March 2012.

Segmentation of Magnetic Resonance Images for Structural Modeling of the Heart, (Poster), R.I.T Graduate Research Symposium, Rochester NY, July 2011.

SELECTED PROJECTS

SunnyR, a digital tool designed to help educators and students ages 12-17 face adversity and promote resilience by analyzing potential behavioral disorders and finding resources. Mindful activities may also be encouraged in the classroom to promote a healthier learning environment and a safe space. If appropriate, educators may also provide information discovered with this app to parents/guardians of targeted youth. Developed for the Census Bureau Opportunity Project, fall 2022.

XamineYourWorld, a digital tool to build and improve data literacy skill. Organized by the Census Bureau under TOP Opportunity Project, Fall 2021. *XamineYourWorld* uses 2020 Decennial Census Data and ACS Data to help K-12 students, teachers, and education stakeholders build data literacy skills through analyzing, assessing, and taking action with data visualizations. (<https://decennialcensusdataliteracy2021.shinyapps.io/TOPProject/>)

AirMotionDC, a digital tool for monitoring and analyzing traffic patterns, air pollution and weather in the D.C. area. Organized by the Census Bureau under TOP Opportunity Project, Fall 2020. *AirMotionDC* compiles and visually displays real time data on traffic patterns, air pollution, and weather in the District of Columbia to explore the relationship between transportation and air quality locally, at both a granular level and citywide level.

Programming Projects in Parallel Computing, as a part of the course Introduction to Parallel Computing, Spring 2014.

Introduction to basic aspects of parallel programming and the algorithmic considerations involved in designed scalable parallel numerical methods. (Use of MPI)

Deblurring Images, Matrices, Spectra and Filtering, Supervisor Dr. Florian Potra, Spring 2013. Study of modern techniques for solving realistic large-scale problems in image deblurring.

Programming Projects in C, as part of the course Computational Mathematics and C programming, Feb - May 2013.

Introduction to theory and computational algorithms in selected topics of interest to mathematicians,

engineers and scientists. Includes design and implementation of algorithms as C programs.

Modeling and Optimization of QEPAS sensors, Supervisor Dr. John Zweck, Dr. Susan Minkoff, Aug. 2012.

Introduce a mathematical model for a Quartz-Enhanced Photo-Acoustic Spectroscopy (QEPAS) sensor with viscous damping that will enable us to numerically optimize sensor design. (Use of COMSOL 4.2)

Computing Hilbert Functions using the Syzygy and LCM-lattice methods, (**Master Thesis**), Supervisor Dr. Manuel Lopez, Aug. 2011.

Study of the growth rate within families of Hilbert functions generated via an inverse difference table, in particular the doubling behavior empirically observed within some of those families. (Use of Macaulay2-Excel)

Segmentation of Magnetic Resonance Images for Structural Modeling of the Heart, as part of the research position at R.I.T, July 2011.

Developed an algorithm based on Active Contours method for segmenting 3-D cardiac images with little to no user input. (Use of Matlab)

Babai's algorithm and using a "good" basis to solve appr CVP, as part of the course Mathematical Cryptography, May 2010.

Described the Closest Vector Problem and presented the basic idea of Babai's algorithm by solving an example in a Lattice L of dimension 2. Described the difficulties of counting the distance between two points in a Lattice of higher dimension.

The Data Clustering Problem, as part of the course Methods of Scientific Computing, April 2010.

Used a method (SVD and K-means clustering) in order to recover the best estimate of the original image from its noisy version. (Use of Matlab)

Real World Connectivity, as part of the course Graph Theory, September 2009.

Used a graph to model the infrastructure of National Lambda Rail, a national computer network that uses fiber-optic lines.

An Introduction to Gröbner Bases, (**Degree Thesis**), Feb. 2007.

Analyzed Grobner Bases and their applications to cryptography and computer science.

STUDENT
ADVISING

Tyler Halliwell	MetLife Internship	Spring 2023
Conducted a research on CMIP liabilities and monthly financial projections. Built models and worked on the Anaplan model.		
Faculty Supervisor: Maria Barouti.		

Meera Patel, Lindsay Beyak, Jonathan Hague	M.S. in Data Science	Fall 2022
The Census Bureau Opportunity Project (TOP): Develop a digital tool SunnyR to help educators and students in Puerto Rico promote resilience by analyzing potential behavioral disorders and apt resources.		

Haiman Wong, Jingyi Xu, Doudou Shi, Elizabeth Marge	M.S. in Data Science	Fall 2021
The Census Bureau Opportunity Project (TOP): Develop a digital tool XamineYourWorld to build and improve data literacy skills.		

Alexis De Silva	NASA Internship	Fall 2021
Research Project: Data Science and Statistical Analysis for Human Contributions to Safety Research. Faculty Supervisor: Maria Barouti.		

David Saff	Internship	Summer 2021
Conduct research on AFT members' compensation benefits and input such information into the		

Faculty Supervisor: Maria Barouti.

Chace Paulson, Minh-Tuan Nguyen	M.S. in Data Science	Fall 2020
Shalini Ramachandra	B.S. in Statistics and Public Health	
The Census Bureau Opportunity Project (TOP): Develop a digital tool for monitoring and analyzing traffic patterns, air pollution and weather in the D.C. area.		

Yon Garber B.S. in Business Administration/Data Science **Fall 2018 - Spring 2019**
 Fall 2018: Design of experimental learning projects in order to familiarize the student with mathematical and statistical tools used for further research.
 Spring 2019: Collect public political data from available literature for detection of fake news. Pre-process and perform some basic statistical analysis.

Rochester Institute of Technology, 2011 BERNOULLI Award for Academic and Athletic Accomplishments.

1. developing, launching and managing the new program,
2. developing course schedules,
3. recruitment of new students and cultivating student enrollment,
4. recruiting faculty and coordinating faculty teaching assignments,
5. leading the annual program assessment process,
6. participating and consulting with our Graduate Enrollment and Marketing (GEM) and Communications (COM) team,
7. advising and admissions work,
8. management of online courses and platform,
9. integrating the program into AU-wide initiatives in coordination with the Office of the Chief Online Officer,
10. coordinating with the Chief Online Officer's team of instructional designers.

1. lead program meetings,

2. recruit adjunct faculty members,
3. develop and coordinate program events for the program,
4. participate in study groups and task forces representing data science,
5. cultivate majors,
6. process and accept applicants through recruit system,
7. provide ongoing student advising after admission,
8. respond to prospect questions about the program,
9. attend open houses for prospects,
10. lead and fully coordinates the Data Science Practicum (Data 793),
11. supervise and mentor undergraduate and graduate students through funded research and independent study projects as well as the Data Science Practicum course,
12. reach out to other faculty, companies and institutions for collaborative research projects for DS graduate students,
13. write and submit proposals in order to increase diversity in Data Science,
14. organize Summer Professional Development Workshop for DCPS system teachers and staff.

MS committee member and thesis reader

Zoë E. Laky M.S. in Psychology **Fall 2022**
 Thesis Title: “Using Machine Learning to Predict Quit Attempts among Cigarette Smokers”
 American University

Egzona Rexhepi M.S. in Statistics **Summer 2022**
 Thesis Title: “Independent Vector Analysis with Sparse Inverse Covariance Estimation”
 American University

Zack Nadrich M.S. in Statistics **Fall 2020**
 Thesis Title: “Applications of a Spatial L-Temporal Markov Random Field”
 American University

Lucas de Paula Damasceno M.S.in Teleinformatics Engineering **Spring 2021**
 Thesis Title: “Independent Vector Analysis using Semi-Parametric Density Estimation via Multi-variate Entropy Maximization”
 Federal University of Ceara

Department of Mathematics and Statistics, American University

<i>Rank Committee Member</i>	August 2022 - December 2023
<i>Data Science Graduate Studies Committee Member</i>	January 2020 - December 2023
<i>Data Science Tenure-line Search Committee Member</i>	August 2022 - December 2023
<i>Outreach and Alumni Relations Committee Member</i>	August 2022 - December 2023
<i>Adjunct Hiring and Review Committee Member</i>	January 2020 - April 2021
<i>Awards Committee Member</i>	January 2020 - April 2021
<i>Facilities & Governance Major Program Review Committee Member</i>	January 2020 - April 2021

Public Relations Committee Committee Member

January 2020 - April 2021

American Statistical Association

Publication Officer, ASA Statistics in Risk Analysis Section

January 2018 - January 2020