

Mehdi Maadooliat

CONTACT INFORMATION	<p>Katherine Reed Cudahy Hall, Room 369 Dept. of Math. & Stat. Sci. (MSSC) Marquette University Milwaukee, WI 53201-1881, USA</p>	<p><i>Phone:</i> (414) 288-6341 <i>Fax:</i> (414) 288-5472 <i>E-mail:</i> mehdi.maadooliat@mu.edu <i>Web:</i> http://www.mssc.mu.edu/~mehdi</p>
CITIZENSHIP	Iranian - USA	
RESEARCH INTERESTS	Statistical Machine Learning, Bioinformatics (Genomics & Proteomics), Dimension Reduction, Functional Data Analysis and Skewed Distributions	
ACADEMIC EMPLOYMENT	<ul style="list-style-type: none">• Associate Professor, Statistics, Marquette University, August 2020 - Present• Assistant Professor, Statistics, Marquette University, August 2013 - July 2020• Adj. Ass. Res. Scientist, CPMR, Marshfield Clinic, December 2015 - July 2020	
EDUCATION & TRAINING	<p>Texas A&M University, College Station, Texas USA</p> <p>Postdoctoral Fellow, Institute for Applied Mathematics & Computational Sciences (IAMCS), June 2011 - June 2013</p> <p>Ph.D., Department of Statistics, August 2011, GPR: 4.00</p> <ul style="list-style-type: none">• Dissertation Title: Dimension reduction and covariance structure for multivariate data, beyond Gaussian assumption• Advisor: Professor Jianhua Huang• Co-Advisor: Dr. Jianhua Hu (MD Anderson Cancer Center) <p>Marquette University, Milwaukee, Wisconsin USA</p> <p>M.Sc., Mathematics, Statistics and Computer Science, August 2006, GPR: 3.96</p> <ul style="list-style-type: none">• Essay Title: Skew normal distribution and maximization by parts in likelihood• Advisor: Professor Naveen Bansal <p>Sharif University of Technology, Tehran, IRAN</p> <p>B.Sc., Department of Mathematical Science, December 2003</p> <ul style="list-style-type: none">• Essay Title: Secret sharing in graph theory• Advisor: Professor Ebadollah S. Mahmoodian	
HONORS AND AWARDS	<p>Way Klingler Young Scholar Award:</p> <ul style="list-style-type: none">• Way Klingler award supports promising young scholars in critical stages of their careers following their third-year review. The award is intended to fund \$2,000 in operating cost and to cover a portion of salary to afford the recipient a one-semester release from teaching (March 2016). <p>Travel Supports:</p> <ul style="list-style-type: none">• Australian National University (visited Canberra & Sydney, May 2019)• Iran's National Elites Foundation (visited Tehran, Shiraz & Yazd, December 2017)• King Abdullah University of Science & Technology (visited KAUST, November 2017)• Pontificia Universidad Católica de Chile (visited Santiago, October 2017)• King Abdullah University of Science & Technology (visited KAUST, March 2015) <p>NVIDIA:</p> <ul style="list-style-type: none">• NVIDIA GPU Grant Program (September 2017).	

Monographs:

- G.G. Hamedani, **M. Maadooliat**, “Characterizations of recently introduced univariate continuous distributions”, Nova, ISBN: 978-1-53612-261-9, (2017)
- G.G. Hamedani, **M. Maadooliat**, “Sub-Independence: A Useful Concept”, Nova, ISBN: 978-1-63463-476-2, (2015)

Book Chapters:

- J. Trinka, H. Haghbin and **M. Maadooliat**, Multivariate functional Singular Spectrum Analysis: A nonparametric approach for analyzing multivariate functional time series?, a book chapter in “Innovations in multivariate statistical modelling: navigating theoretical and multidisciplinary domains” to be published by Springer Emerging Topics in Statistics and Biostatistics, (Accepted).

Journal Articles (Published/Accepted):

- H. Haghbin, S. M. Najibi, R. Mahmoudvand, J. Trinka and **M. Maadooliat**, “Functional singular spectrum analysis”, *Stat (Special Issue in Statistics and Data Science)*, **10**, e330, (2021)
- A. Nodehi, M. Golalizadeh, **M. Maadooliat** and C. Agostinelli, “Estimation of multivariate wrapped models for data on a p-Torus”, *Computational Statistics*, **36**, 193-215, (2021)
- N.K. Bansal, **M. Maadooliat** and S. Mahmoudiandehkordi, “On Bayes Decision Rule for Testing Multiple Hypotheses with Non-symmetric Alternatives”, *Journal of Statistical Theory and Practice*, **15**, 55, (2021)
- T. Chen, Y. Sun and **M. Maadooliat**, “Collective spectral density estimation and clustering for spatially-correlated data”, *Spatial Statistics*, **38**, 100451, (2020)
- S. Guo, S. Jiang, N. Epperla, Y. Ma, **M. Maadooliat**, Z. Ye, B. Olson, M. Wang, T. Kitchner, J. Joyce, R. Strenn, J.J. Mazza, J.K. Meece, W. Wu, L. Jin, J.A. Smith, J. Wang and S.J. Schrodi, “A Gene-Based recessive diplotype exome scan discovers FGF6, a novel hepcidin-regulating iron metabolism Gene”, *Blood*, **133.17**, 1888-1898, (2019)
- **M. Maadooliat**, Y. Sun and T. Chen, “Nonparametric collective spectral density estimation with an application to clustering the brain signals”, *Statistics in Medicine*, **37**, 4789-4806, (2018)
- N.K. Bansal, **M. Maadooliat** and S.J. Schrodi, “Empirical Bayesian approach to testing multiple hypotheses with skewed alternatives”, *Statistical Applications in Genetics and Molecular Biology*, **17**, A20180002, (2018)
- I. Ghosh, G.G. Hamedani, N.K. Bansal and **M. Maadooliat**, “On the mixtures of Weibull and Pareto (IV) distribution: an alternative to Pareto distribution”, *Communications in Statistics - Theory and Methods*, **47**, 2073-2084, (2018)
- S.M. Najibi, **M. Maadooliat**, L. Zhou, J.Z. Huang and X. Gao, “Protein structure classification and loop modeling using multiple Ramachandran distributions”, *Computational and Structural Biotechnology Journal*, **15**, (2017)

- M.J. Bull, L. Boaz, **M. Maadooliat**, M.E. Hagle, L. Gettrust, M.T. Greene, S.B. Holmes and J.S. Saczynski. “Preparing family caregivers to recognize delirium symptoms in older adults following elective hip or knee arthroplasty”, *Journal of the American Geriatrics Society*, **65**, e13-e17, (2017)
- **M. Maadooliat**, L. Zhou, S.M. Najibi, X. Gao and J.Z. Huang, “Collective estimation of multiple bivariate density functions with application to angular-sampling-based protein loop modeling”, *Journal of the American Statistical Association*, **111**, 43-56, (2016)
- H.M. Kim, **M. Maadooliat**, R.B. Arellano-Valle and M.G. Genton, “Skewed Factor models using selection mechanism”, *Journal of Multivariate Analysis*, **145**, 162-177, (2016)
- N.K. Bansal, G.G. Hamedani and **M. Maadooliat**, “Testing multiple hypotheses with skewed alternatives”, *Biometrics*, **72**, 494-502, (2016)
- **M. Maadooliat**, N.K. Bansal, J. Upadhyay, M.R. Farazi, Z. Ye, X. Li and S.J. Schrod, “The decay of disease association with declining linkage disequilibrium: A fine mapping theorem”, *Frontiers in Genetics: Statistical Genetics and Methodology*, **7**, A217 (2016) (PMC5149547)
- **M. Maadooliat**, J.Z. Huang and J. Hu, “Integrating data transformation in principal components analysis”, *Journal of Computational and Graphical Statistics*, **24**, 84-103, (2015)
- M. Ahsanullah, G.G. Hamedani and **M. Maadooliat**, “Characterizations of distributions via conditional expectation of generalized order statistics”, *International Journal of Statistics and Probability*, **4**, (2015)
- G.G. Hamedani, Z. Javanshiri, **M. Maadooliat** and A. Yazdani, “Remarks on characterizations of Malinowska & Szynal”, *Applied Mathematics and Computation* **246**, 377-388, (2014)
- L. Chen, M. Pourahmadi and **M. Maadooliat**, “Regularization of multivariate regression models with skew errors”, *Journal of Statistical Planning and Inference* **149**, 125-139, (2014)
- Z. Javanshiri and **M. Maadooliat**, “Beta Burr XII OR Five Parameter Beta Lomax Distribution: Remarks and Characterizations”, *Journal of Statistical Theory and Applications* **13**, 105-110, (2014)
- M.E. Mousavi, P. Gardoni and **M. Maadooliat**, “Progressive Reliability Method and Its Application to Offshore Mooring Systems”, *Engineering Structures* **45**, 2131-2138, (2013)
- **M. Maadooliat**, X. Gao and J.Z. Huang, “Assessing protein conformational sampling methods based on bivariate lag-distributions of backbone angles”, *Briefings in Bioinformatics* **14**, 724-736, (2013)
- **M. Maadooliat**, M. Pourahmadi and J.Z. Huang, “Robust estimation of the correlation matrix of longitudinal data”, *Statistics and Computing* **23**, 17-28, (2013)

- **M. Maadooliat**, J.Z. Huang and J. Hu, “Analyzing multiple-probe microarray: estimation and application of gene expression indexes”, *Biometrics* **68**, 784-792, (2012)
- J.Z. Huang, M. Chen, **M. Maadooliat** and M. Pourahmadi, “A cautionary note on generalized linear models for covariance of unbalanced longitudinal data”, *Journal of Statistical Planning and Inference* **142**, 743-751, (2012)
- N.K. Bansal, **M. Maadooliat** and X. Wang, “Empirical Bayes and hierarchical Bayes estimation of skew normal populations”, *Communications in Statistics - Theory and Methods* **37**, 1024-1037, (2008)

TEACHING EXPERIENCE

Instructor, [Marquette Univ.](#)

August 2013 - Present

- Full teaching responsibility for
 - ~ 15 students in course MSSC 6250: Statistical Machine Learning
 - ~ 15 students in course MSSC 6010: Computational Probability
 - ~ 20 students in course MSSC 5931: Mathematical Foundations of Data Science
 - ~ 10 students in course INDS 4997: Capstone in Data Science
 - ~ 30 students in course MATH 4780(MSSC 5780): Regression Analysis
 - ~ 35 students in course MATH 4720(MSSC 5720): Statistical Methods
 - ~ 15 students in course MATH 4710(MSSC 5710): Mathematical Statistics
 - ~ 120 students in course MATH 1700: Modern Elementary Statistics
- Co-teach MSSC 6960: Seminar on
 - Interdisciplinary data analysis - Fall 2013-16
(Running a graduate seminar course with two of my colleagues)
 - Functional data analysis - Spring 2021
(Running a graduate seminar course with my Ph.D. student)

Instructor, [TAMU](#)

January 2007 - May 2011

- Full teaching responsibility for ~ 50 students per semester in three undergraduate courses STAT 303, STAT 302, and STAT 211
Independently developed lecture notes, exams, activities, and quizzes

Graduate Teaching Assistant, [TAMU](#)

September 2006 - December 2006

- Graded assignments for 2 sections of STAT 201 and tutored in Help Lab

Graduate Teaching Assistant, [Marquette Univ.](#)

September 2004 - May 2006

- Teaching Assistant for the following courses :
Finite Mathematics, Differential Equations and Statistical Inference

Graduate Teaching Assistant, [Iran Univ. of Sci. & Tech.](#) **January 2004 - May 2004**

- Teaching Assistant for “Differential Equations”

Short Courses, [IUST](#) and [Iranian National Commission for UNESCO](#) **2000 - 2002**

- Delivering short courses on Networking, Internet and Programming Languages such as Visual Basic, Pascal and C++.

RESEARCH EXPERIENCE

Assoc. Research Scientist, [CPMR, Marshfield Clinic](#)

December 2015 - July 2020

- Construction of novel statistical genetics methods

Postdoctoral Research Fellow, IAMCS-KAUST	June 2011 - June 2013
• Statistical modeling of the protein structure	
Internship, MD Anderson Cancer Center ,	May 2009 - August 2009
-	May 2008 - August 2008
• Modeling the gene expression indexes for multiple-probe microarray data	
Graduate Research Assistant, TAMU	January 2009 - December 2009

GRANTS

External:

- National Institute of Health (NIH) R01: Hunter, C. Sundberg, R. Fitts, and **M. Maadooliat**, “Fatigability of limb muscle in older adults: Protective effects of exercise”,
Role: Co-Investigator (5% effort). **September 2020 - April 2025**
- Marshfield Clinic Research Institute (MCRI): S.J. Schrodi, **M. Maadooliat** and S. Guo, “Detecting shared chromosomal regions and compound heterozygous effects for diseases within PMRP”,
Role: Site-PI (20% effort). **July 2018 - July 2020**
- National Institute of Health (NIH) R01: J. LaDisa, T. Eddinger and **M. Maadooliat**, “Mech. of morbidity after correcting aortic coarctations of varying severity”,
Role: Consultant (5% effort). **June 2018 - May 2023**
- National Institute of Health (NIH) R01: R. Fitts, S. Hunter, A. Ng, S.W. Trappe, C. Konersman and **M. Maadooliat**, “Fatigability of limb muscle in older adults: Protective effects of exercise”,
Role: Co-Investigator (5% effort). **September 2015 - August 2020**
- Retirement Research Foundation (RRF): M. Bull, L. Boaz, L. Gettrust, M. Hagle, J. Saczynski and **M. Maadooliat**, “Preparing family carers to recognize symptoms of acute confusion (Delirium) in older adults following elective arthroplasty of the knee or hip”,
Role: Statistician (10% effort). **September 2014 - August 2015**

Internal:

- Strategic Innovation Fund (Marquette University): N. Bansal, **M., Maadooliat**, “Statistical Consulting and Training Center (SCTC)”
Role: Co-PI. **July 2016 - July 2019**

PRESENTATIONS

- “Forecasting Multivariate Functional Time Series: MFSSA Approaches”
– Symposium on Data Science and Statistics; Pittsburgh, PA, June 2022
- “Functional Singular Spectrum Analysis (FSSA)”
– Statistics Colloquium, University of Ottawa; Ontario, CAN, Apr 2022
– Statistics Colloquium, Univ. of Southern Illinois; Carbondale, Mar 2022
– Statistics Colloquium, University of Cincinnati; Cincinnati, Mar 2022
– Statistics Colloquium, Tarbiat Modares University; Tehran, IR, Dec 2021

- ICSA Applied Statistics Symposium; Virtual, Sep 2021
- Data Science Ensemble, University of Maine; Orono, ME; Virtual, August 2021
- The 1st Seminar in Data Science and Applications, Tehran; Virtual, April 2021
- Symposium on Data Science and Statistics; Virtual, June 2020
- “Nonparametric collective (spectral) density estimation with applications in Bioinformatics”
 - SCM Seminar, Sharif University of Technology; Tehran, IR, January 2020
 - The 3rd Frontiers in Biol. Sci. symposium, IPM; Tehran, IR, December 2019
 - Statistics Colloquium, Yazd University; Yazd, IR, December 2019
 - Statistics Colloquium, Australian National Univ.; Canberra, AUS, May 2019
 - Statistics Colloquium, University of Sydney; Sydney, AUS, May 2019
 - Statistics Colloquium, Shahid Beheshti University; Tehran, IR, January 2019
 - The 14th Iranian Statistics Conference; Shahrood, IR, August 2018
 - Stat. Learn. and Data Sci. Conf.; Columbia Univ., New York, NY, June 2018
 - Statistics Colloquium, Oklahoma State Univ.; Stillwater, OK, February 2018
- “Deep Learning in R”
 - Webinar Series hosted by Iranian Statistical Society, December 2020
 - The 15th Iranian Statistics Conference; Virtual, September 2020
 - Workshop on Deep Learning; Northwestern Mutual, Milwaukee, WI, April 2019
- “A one-day workshop on Functional Data Analysis and Dimension Reduction”
 - Shiraz University; Shiraz, IR, November 2017
 - Tarbiat Modares University; Tehran, IR, November 2017
- “Integrating data transformation in (functional) principal components analysis”
 - Statistics Colloquium, Yazd University; Yazd, IR, December 2017
 - ASA Wisconsin Chapter Annual meeting; Milwaukee, WI, February 2016
 - MSCS Department Colloquium, Marquette U.; Milwaukee, WI, November 2015
 - Computer Science Colloquium, UWM; Milwaukee, WI, March 2015
 - Statistics Colloquium, Shahid Beheshti University; Tehran, IR, January 2015
 - Joint Statistical Meetings; Boston, MA, August 2014
 - ICSA Applied Statistics Symposium; New York City, NY, June 2011
- “Empirical Bayesian approach to testing multiple hypotheses with skewed alternatives”
 - Flexible statistical models workshop; Santiago, Chile, October 2017
- “Collective nonparametric spectral density estimation with applications in clustering”
 - The 13th Iranian Statistics Conference; Kerman, IR, August 2016
 - Joint Statistical Meetings; Chicago, IL, August 2016

- “Collective modeling of the densities (III) with applications to protein structure classification and prediction”
 - Statistics Colloquium, Tarbiat Modares University; Tehran, IR, June 2016
- “Collective estimation of multiple bivariate density functions with application to angular-sampling-based protein loop modeling”
 - Scientific Seminar, Marshfield Clinic Research Foundation, WI, August 2015
 - The 2nd International Conf. on Math. and Stat.; Sharjah, UAE, April 2015
 - Comp. Sci. Colloquium, King Abdullah U. of Sci. & Tech., KSA, March 2015
 - Statistics Colloquium, UWM; Milwaukee, WI, February 2015
 - Biostatistics Colloquium, MCW; Milwaukee, WI, April 2014
- “Joint estimation of multiple bivariate densities of protein backbone angles using an adaptive exponential Spline family”
 - Institute for Research in Fundamental Sci. (IPM); Tehran, IR, January 2014
 - Statistics Colloquium, Purdue University; West Lafayette, IN, November 2013
 - Joint Statistical Meetings; Montréal, QC, August 2013
 - MSCS Department Colloquium, Marquette U.; Milwaukee, WI, December 2012
- “A goodness-of-fit test for the protein conformational sampling”
 - Joint Statistical Meetings; San Diego, CA, August 2012
- “Assessing protein conformational sampling methods based on bivariate lag distributions of backbone angle”
 - Workshop at University of Florida; Gainesville, FL, January 2014 (poster)
 - Biomolecular Dynamics Conf., KAUST; Thuwal, KSA, February 2013 (poster)
 - Interface; Houston, TX, May 2012
- “Analyzing multiple-probe microarray: estimation and application of gene expression indexes”
 - The 3rd Annual IAMCS Spring Symposium; College Station, TX, May 2011
- “Nonlinear PCA based on data transformation”
 - Joint Statistical Meetings; Vancouver, BC, August 2010
- “Skewed probabilistic principal component analysis”
 - Department of Statistics Skew Tea Meetings, Texas A&M University; College Station, TX, March 2010
- “Statistical modeling for Oligonucleotide arrays using PCA with likelihood approach”
 - Joint Statistical Meetings; Washington, DC, August 2009 (poster)

Post-doctoral

- Dr. Morteza Najibi, March 2014 - August 2015
(Phd: [Shahid Beheshti University](#), Tehran, Iran)
Research Topic: Nonparametric density estimation with an application to modeling the protein structure.

Doctoral (Advisor, Co-advisor)

- Soroush Mahmoudiandehkordi, August 2020 - Present
(Ph.D. Student: Computational Sciences at [Marquette University](#), Milwaukee, WI)
Thesis Topic: GWID: A new Genome-Wide identity-by-descent analysis for disease gene mapping.
- Jesse Adikorley, Dec 2020 - Present
(Ph.D. Student: Computational Sciences at [Marquette University](#), Milwaukee, WI)
Thesis Topic: Hilbertian Singular Spectrum Analysis
- Yue Zhao, January 2021 - Present
(Ph.D. Student: Computational Sciences at [Marquette University](#), Milwaukee, WI)
Thesis Topic: Regularized multivariate multidimensional functional Principal Component Analysis
- Shirin Nezampour, June 2016 - Present (co-advisor: Dr. Alireza Nematollahi)
(Ph.D. Student: Statistics at [Shiraz University](#), Shiraz, Iran)
Thesis Topic: On the estimation problem in the multivariate time series.
- Jordan Trinka, May 2019 - May 2021
(Ph.D. Student: Computational Sciences at [Marquette University](#), Milwaukee, WI)
Thesis Topic: Functional Singular Spectrum Analysis: Nonparametric Decomposition and Forecasting Approaches for Functional Time Series
- Anahita Nodehi, January 2016 - August 2020
(co-advisor: Dr. [Mousa Golazlizadeh](#))
(Ph.D. Student: Statistics at [Tarbiat Modares University](#), Tehran, Iran)
Thesis Topic: Probabilistic dimension reduction for a set of random angles using nonlinear statistics.
- Alireza Daneshvar, Jan. 2018 - Jan. 2020 (withdrew)
(co-advisor: Dr. [Mousa Golazlizadeh](#))
(Ph.D. Student: Statistics at [Tarbiat Modares University](#), Tehran, Iran)
Thesis Topic: Dimension reduction of penalized quantile regression with mixed effect.

Master (Advisor)

- Azam Niknafs, June 2020 - May 2021
(M.Sc. Student: Computational Sciences at [Marquette University](#), Milwaukee, WI)
Essay Topic: A Hierarchical clustering approach to route optimization and ride sharing
- Jordan Trinka, February 2018 - May 2019
(M.Sc. Student: Computational Sciences at [Marquette University](#), Milwaukee, WI)
Essay Topic: Functional Singular Spectrum Analysis and the clustering of time-dependent data

External Committee Member

- Tianbo Chen, January 2016 - February 2019 (Advisor: Dr. Ying Sun)
(Ph.D. Student: Statistics at King Abdullah Univ. of Sci. and Tech., Thuwal, SA)
Thesis Topic: Spectral density functions estimation and clustering for time series and spatial data.
- Ronak Vahed, April 2018 - June 2018 (Advisor: Dr. Abbas Milani)
(M.Eng. Student: ME. at Univ. of British Columbia, Okanagan, BC, Canada)

Internal Committee Member

- Served on
Ph.D. Committees of 10 students and
M.Sc. Committees of 6 students
at Marquette University.

SERVICES

Journal of Statistical Theory and Applications

- Associate Editor January 2012 - Present
- Editorial Assistant June 2005 - December 2011

Journal of the Iranian Statistical Society

- Associate Editor August 2017 - Present

Wisconsin Chapter of the ASA

- Past President July 2016 - July 2017
- President June 2015 - July 2016
- Vice President July 2014 - June 2015

Marquette University - MSSC Department

- Graduate Chair July 2022 - Present
- Co-Director of the Bioinformatics Program August 2021 - Present
- Comprehensive Exam Committee August 2020 - Present
- Undergraduate Chair August 2020 - July 2021
- Co-Director of the Applied Statistics Program August 2020 - July 2021
- Chair Search Committee August 2020 - February 2021
- Chair an Ad hoc Comm. to Design Statistics Major March 2020 - March 2021
- Faculty Search Committee for Statistics August 2019 - February 2020
- Undergraduate Committee Jan 2018 - Present
- Comprehensive Exam Committee August 2017 - January 2018
- Co-Director of the Office of Stat. Consult. & Training July 2016 - Present
- Graduate Committee August 2015 - July 2016
- Faculty Search Committee for Statistics October 2015 - March 2016
- Ad hoc Comm. - Design Hon. Stat. Course September 2015 - December 2015
- Website Coordinator August 2014 - August 2020
- Computer Support Committee August 2014 - July 2015

WORK

EXPERIENCE

Iranian National Commission for Unesco, Tehran, IRAN

- Network Administrator January 2002 - December 2003

Iran University of Science & Technology, Tehran, IRAN

- Network Administrator January 2000 - December 2001

COMPUTER SKILLS

- Matlab, Mathematica, Maple, SAS, R

- T_EX, L^AT_EX, Microsoft Office
- J2SE(Java 2 Standard Edition) : Applet, Socket, Thread, RMI
- J2EE(Java 2 Enterprise Edition) : JDBC, JNDI, Servlet, JSP, EJB, JavaMail,
- .NET, SQL, ASP, PHP, XML, DHTML
- C++, Pascal, JavaScript, VBScript
- Network Security, TCP/IP

ORGANIZATIONS

- American Statistical Association member
- Institute of Mathematical Statistics member
- Iranian Statistical Society

¹Last Updated: Jul. 9th, 2022