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## **EDUCATION**

Ph.D. Computational Sciences and Informatics (Statistics), George Mason University, 1995  
M.S. Aerospace Engineering, George Washington University, NASA Langley Research Center, 1991  
B.S. Physics and Mathematics (double major), Cameron University, 1989  
Joint Program in Survey Methodology Certificate in Survey Statistics, 2015

## **SERVICE TO PROFESSION**

- Chair, History of Statistics Interest Group, 2018
- Advisory Board, *Journal of Survey Statistics and Methodology*, 2018 – present
- Chair, Statistical Computing Section, 2019
- ASA/AAPOR Task Force on Improving the Climate for Surveys, 2017
- Committee on ASA Archives and Historical Materials, 2017 – 2019
- ASA Government Statistics Section Committee to Nominate Fellows Chair, 2017 – 2019
- Washington Statistical Society Methodology Chair, 2016 – 2018
- ASA Committee on Publications, 2010 – present
- Coordinating Editor for the journal *Statistics Surveys*, 2006 – present
- Washington Statistical Society, Statistics and National Security Program Chair, 2004 – present
- Member of Army Conference on Applied Statistics Executive Board, 2000 – 2016
- Keynote Speaker, Women in Statistics and Data Science, 2016
- JSM Program Chair, ASA Statistical Computing Section, 2016
- Chair, ASA Government Statistics Section, 2015
- Program Chair, Conference on Applied Statistics in Defense, 2013 – 2014
- Editor for *Significance* (Royal Statistical Society (UK) and American Statistical Association (ASA)), 2010 – 2014
- Joint Statistical Meetings Program Chair, 2009
- Chair, ASA Section on Statistics in Defense and National Security, 2009
- Chair, ASA Committee on Outreach Education, 2005 – 2010
- JSM Program Chair, ASA Section on Statistics in Defense and National Security, 2005 – 2006
- Member of Steering Committee NSF Workshop on Density Estimation and Bump Hunting, 1995
- Referee papers for statistics journals

## **LEADERSHIP OF MULTIDISCIPLINARY GROUPS**

- Federal agencies have to deal with unique IT issues. In 2015, I started and am currently leading an Inter-Agency R User's Group to share information on challenges faced by agencies in using R for official statistics and how they deal with them. The group shares resources for training, installation, security, and publication of code.

- I saw the need for an inter-agency group to exchange research ideas and accomplishments in the analysis of geospatial data. I successfully lobbied to establish an interest group under the sponsorship of the Federal Committee on Statistical Methodology (FCSM). I have been the Chair of this group from 2014 to the present.
- I established an R User's Group at the BLS in 2012. I led the group for the first year, and the group is thriving. At the same time, I started a training program in R for BLS employees. We now have several instructors who are developing and teaching courses on specific topics, such as graphics, linear modeling, and survey methods.
- Starting in 2010, I worked with the president of the Institute of Mathematical Statistics to establish an open-access journal by gathering sponsorship from several international statistical societies and establishing an initial editorial board comprised of outstanding researchers from the international science and technology community. I continue to lead the group as Coordinating Editor.

## **WORK EXPERIENCE**

### **Director, Mathematical Statistics Research Center**

10/21/2011 to present

Office of Survey Methods Research  
Bureau of Labor Statistics (BLS)

The Office of Survey Methods Research plans and directs activities for evaluating and improving BLS programs and conducts primary research on statistical and behavioral science issues relevant to the BLS mission. The Mathematical Statistics Research Center (MSRC) supports the entire agency with research in sample design, variance estimation, computational statistics, Bayesian methods, inference based on complex survey data, and the use of metadata. My duties and responsibilities are to

- Supervise employees, which includes formulating performance plans, mentoring, fostering employee training and development, evaluating performance, hiring, and conflict resolution;
- Formulate and carry out a strategic plan for the MSRC that achieves the operational goals of the agency;
- Conduct research in my areas of interest, which includes text analysis, visualization, exploratory data analysis, and computationally intensive statistical methods;
- Resolve budget issues and ensure that contracts are established in a timely manner; and
- Conduct outreach to users and stakeholders within the US and internationally.

Some of my specific accomplishments include the following:

- I worked to establish the use of R (an open-source computational statistics environment) for BLS surveys. This involves determining areas in which R can be used without disrupting the publication of principal federal statistics, meeting with program offices to build a consensus, and creating a strategic plan. To further these goals, I established an inter-agency and international user's group on the use of R for official statistics.
- I established an inter-agency group to focus on the analysis of geospatial data in federal agencies. It was through my leadership and vision that representatives from several agencies were brought together, and the group is now sponsored by the Federal Committee on Statistical Methodology.
- I established new concepts in text analysis to extract information from unstructured text fields. I am leading a team to implement these ideas in BLS programs.

### **Senior Scientist/Engineer/Statistician**

06/09/2008 to 10/21/2011

Joint Warfare Analysis Center  
Dahlgren, Virginia 22448

I held the position of Senior Statistician at the Joint Warfare Analysis Center (JWAC). JWAC provides combatant commands, Joint Staff and other customers with engagement options for selected networks and nodes in order to carry out national security and military strategies of the United States. My major duties and accomplishments were to

- Manage and provide technical guidance on novel research and development programs, analyses, models, simulations, tests, and experiments;
- Identify technical and methodological gaps and formulate research agendas;
- Serve as advisor and consultant to senior management (internal and external) on the advantages, disadvantages, and risks of various approaches for accomplishing strategic and technical objectives;
- Guide research and analytic teams to provide rapid response analyses and to solve complex multidisciplinary problems;
- Write technical reports and make presentations on programs, analyses, and research; and
- Develop and provide training on statistics, visualization, and computing for the workforce.

My specific accomplishments included the following:

- I researched and developed new capabilities for the statistical analysis of spatial-temporal data, text data mining, measures of effectiveness and assessment, trend analysis, estimating probability of weapon effectiveness, variable selection, clustering events, and modeling and simulation of epidemiological events.
- I was a member of the international Technical Cooperation Program, working with representatives from the US (Army, Navy, and Air Force), United Kingdom, Australia, Canada, and New Zealand to foster and establish international collaborative research efforts and programs.
- Working with several Department of Defense agencies, I established policy and procedures for my organization to take advantage of the Small Business Innovation Research (SBIR) program, providing approximately \$500,000 to \$1 million of additional funds per year to develop new capabilities.

**Program Manager**

Office of Naval Research  
Arlington, Virginia 22203

06/15/2002 to 06/06/2008

11/01/1997 to 06/15/2002

I held the position of Science and Technology Program Officer in the Mathematics, Computers, and Information Research Division. My mission was to provide science and technology products, options, and opportunities for the Navy and Marine Corps of the future by increasing knowledge and understanding in information integration, mathematics, and statistics directly related to long-term Department of Defense needs; setting strategic research goals and initiating projects that achieve them; and directing research efforts in science and technology that advance the state-of-the-art and transition to the war-fighter. These efforts often entailed radically new concepts, multidisciplinary research teams, and feasibility demonstrations. Responsibilities and accomplishments included the following:

- I managed a vertically integrated research and development program comprising government, academia, and industry researchers. This included science and technology efforts at the basic research, applied research, and advanced technology development levels. My portfolio grew from 2M to 30M annually, encompassing approximately 60 projects.
- I developed new research programs in mathematical statistics, intelligent systems, pattern recognition, data mining, Bayesian networks, decision-making under uncertainty, scientific and statistical visualization, information technology, automated integration of disparate types/sources of information, modeling and simulation of chemical attacks, and sensor networks for the detection of radiological and nuclear agents.
- I participated in a group that looked at current and future DoD needs in the analysis of large data, where we defined the concept and provided inputs for an R&D plan. This was the forerunner to the area known today as Big Data.

- As a Program Manager for the Command and Control and Combat Systems applied research program (approximately 6M dollars), I was responsible for writing the annual solicitation, formulating and executing the annual budget, obtaining an outside review panel, evaluating proposals, providing feedback to performers, making funding decisions, resolving issues with the awards, holding program reviews to evaluate performance, investigating expenditures and financial issues, communicating results, and providing quantitative information to higher management.
- I prepared and delivered oral presentations and reports to the public and government agencies on research issues, technical accomplishments, the state of the program, and future research directions.
- I served as a certified Contracting Officer's Technical Representative (COTR) on contracts for awards ranging from \$100K to \$70M.

From 1997 to 2002, I also held positions at NSWC with responsibilities and accomplishments given below.

**Deputy Program Manager Independent Research Program**

06/01/2000 to 06/15/2002

Naval Surface Warfare Center  
Dahlgren, Virginia 22448

I held the position of Deputy Program Manager for the Center's basic research program. Duties were to:

- Plan, evaluate, and assess the research program in accordance with established performance measures and the strategic goals of the Center, the Navy, and the nation;
- Expand the scope and diversity of the program;
- Promote more efforts in statistics, mathematics, and information science;
- Prepare annual written report to the Office of Naval Research on the state of the ILIR program, including performance results; and
- Develop, maintain, and participate in the program management process: prepare the call for proposals, communicate performance measures, evaluate and select proposals, and hold annual progress reviews.

**Scientist – Aerospace Engineer**

07/29/1991 to 06/01/2000

Naval Surface Warfare Center  
Dahlgren, Virginia, 22448

I held the position of Scientist for Algorithm Development. Duties were to:

- Develop, analyze, and evaluate algorithms for modeling and simulation of sensor and Navy/USMC systems;
- Translate system attributes and physical characteristics into computer simulations; and
- Perform basic research in signal processing and time-series analysis for automatic target recognition, image texture analysis for non-destructive testing, visualization of massive high-dimensional data sets, statistical pattern recognition, parallel computer programming, and Monte Carlo methods for inferential statistics.

**Adjunct Professor**

Strayer University  
George Mason University

06/01/1995 to 12/20/2006  
05/01/1995 to 12/20/1997

I taught graduate and undergraduate courses in mathematics, statistics, operations research, computational sciences, and databases.

**DETAILS – SELECTED SERVICE POSITIONS**

**Government Statistics Section**  
American Statistical Association

2015 to present

I proposed and established an annual GSS Data Challenge, where students and professionals are asked to analyze a government data set. It was a resounding success in 2015 and 2016, and it is now an annual event for the section. I successfully solicited support from two other ASA Sections for the 2017 challenge. One exciting aspect of the data challenge is the participation from students. In 2016, several professors used the data challenge in their classes and brought their students to the JSM. As Section Chair, I also successfully proposed a change to the GSS charter, setting up a Committee to Nominate Fellows. I will be leading this committee for the first three years as Chair.

**Coordinating Editor, Statistics Surveys**  
<http://www.i-journals.org/ss/>

06/01/2006 to present

I am the Coordinating Editor and co-founder of an open-access online journal that publishes review articles on statistical topics. I worked with a past president of the Institute of Mathematical Statistics to develop editorial policies and procedures and to establish an editorial board comprised of international researchers. Due to my leadership the journal is now supported by several international statistical societies.

**Chair, Program Committee for the Joint Statistical Meetings**  
American Statistical Association

08/01/2007 to 09/01/2009

Based on my previous successful leadership positions in the American Statistical Association (ASA), I was elected to serve as the chair of a committee comprised of approximately thirty five (35) members. The committee was responsible for all aspects of the technical program for the 2009 Joint Statistical Meetings. This conference serves as an annual meeting for six different international statistical societies. I faced many challenges because of last minute changes at the ASA, lack of meeting space, and other issues. My abilities to resolve conflicts and to build partnerships among competing organizations were instrumental in overcoming these difficulties. The result was the most successful conference to date with approximately 6,500 attendees.

### **DISSERTATION/THESIS**

- *Optimal Subset Selection Methods*, Ph.D. Dissertation, George Mason University, 1995
- *Optimal Sensor Locations for On-Orbit Modal Identification of Large Space Structures*, Master's Thesis, George Washington University, 1991

### **BOOKS**

- *Exploratory Data Analysis with MATLAB*, 3<sup>rd</sup> Edition (in press), W. L. Martinez, A. R. Martinez, J. L. Solka, CRC Press, 2017.
- *Computational Statistics Handbook with MATLAB*, 3<sup>rd</sup> Edition, W. L. Martinez, A. R. Martinez, CRC Press, 2015.
- *Statistics in MATLAB: A Primer*, W. L. Martinez, M.J. Cho, CRC Press, 2014.

### **PUBLICATIONS**

I am an author/presenter of the following:

- 3 books
- 5 book chapters
- 25 journal articles
- 4 book reviews
- 37 invited presentations/seminars

- 32 contributed conference presentations/papers

A full list of publications is available upon request.

### **PATENTS**

- U.S. Patent No. 5,859,919 Method and system for measuring surface roughness using fractal dimension values (1999)
- U.S. Patent No. 5,384,895 Self-organizing neural network for classifying pattern signatures using ‘a posterior’ conditional class probability (1995)
- U.S. Patent No. 5,351,311 Neural network for detection and correction of local boundary misalignment between images (1994)
- U.S. Patent No. 5,365,472 Non-linear resistive grid kernel estimator useful in single feature, two-class pattern classification (1994)

### **AWARDS**

- BLS Commissioner’s Award for Management Excellence, 2018
- ASA Founders Award, 2017
- Quality Step Increase, 2016
- Elected member of the International Statistical Institute, 2007
- Elected Fellow of the American Statistical Association, 2006
- Special Act Award, ONR, 1999
- NSWCCD Independent Research Excellence Award, 1995
- GMU Center for Computational Statistics Outstanding Ph.D. Dissertation in Statistical Science, 1995
- NSWCCD Fellowship Award, 1993 – 1994
- NASA – JIAFS Fellowship Award, 1989 – 1991