Curriculum Vitae

Analee M. Miranda, Ph.D.
Clinical Assistant Professor
Department of Mathematics
Pace University, New York City Campus

Education

University of California, Riverside (June 2006)
Bachelor of Science, Applied Mathematics, Physics Option (Quantum Mechanics)
Rensselaer Polytechnic Institute, Troy, NY (December 2007)
Master of Science, Mathematics
Rensselaer Polytechnic Institute, Troy, NY (December 2010)
Doctor of Philosophy, Mathematics Advisor: Margaret Cheney
Dissertation: "Imaging moving objects in a multipath environment using multiple sensors"

Employment History

Clinical Assistant Professor, Pace University (2018-Present)
- Teach Introduction to Business Statistics (multiple sections). Introduction of Biological Statistics, Introduction to Statistics for the Social Sciences, Calculus I (for Scientists), Business Calculus, Multivariable Calculus, Math for life, and College Algebra. Additional coursework in CS includes Mathematical Structures for Computer Science and Mathematical Foundations of Analytics. Course design via Blackboard and Brightspace. Undergraduate student research project design.

Adjunct Professor of Mathematics, Cooper Union (2019-2021)
- Taught Calculus for Engineers and Linear Algebra. Course design via Moodle. Member of the Ad-Hoc Assessments Committee for Remote Learning, 2020. Undergraduate student research project designer. Student research mentor. I also developed course curriculum, designed exams and provided group tutoring and review.

Air Force Research Laboratory (2009– 2015)
Mathematician (April 2011-June 2015) DR-II, SCEP Intern (May 2009-March 2011) GS-11
- **Developed technology**: Miranda, Analee M, Wang, Loria and Keith, Stephanie R. (2018). *Biometric authentication using wideband UHF/VHF radar* (U.S. Patent No. 10,690,766). U.S. Patent and Trademark Office.
- Used supervised/unsupervised machine learning techniques including (Naïve Bayes Classifier, Principal Component Analysis, Support Vector Machine, Linear Regression, Logistic Regression and Artificial Neural Networks) to detect, quantify, index, order and classify features from multiple large I/Q datasets. Used Matlab/R. Created and validated data model for UHF/VHF radar signatures. Created, developed, and led first ever IRB-based

human subject testing protocol involving the use of UHF/VHF active radars in the presence of subjects (aged 4-75 yrs) in a large anechoic chamber.
- Developed mathematical theory for radar technical applications for the Department of Defense.
- Applied existing mathematical theories and techniques to the solution of practical problems in physics, engineering, and biological sciences using Real and Complex Analysis, Statistics, Differential Geometry, Numerical Algebra, and Partial Differential Equations.
- Developed signal processing algorithms and code (C, Python, and Matlab).
- **Wrote proposals and awarded funding for Science and Technology (S&T) projects and programs worth approximately $3M.**
- **Principal Investigator and Program/Project Manager for S&T AFRL-led projects and programs.**
- **Led team of 50+ contractors, students, and government employees to complete a variety of programs and projects.**
- Wrote journal and conference publications, proposals, technical reports, summary reports, and final reports.
- Developed and delivered presentations across academia, government, and industry meetings and conferences.
- Worked with undergraduate/graduate student interns/promoted higher education in STEM.

Wright State University (2012 – 2014)
Adjunct Associate Professor, Department of Computer Science and Engineering
Adjunct Associate Professor, Department of Mathematics
- Taught coursework in Calculus, Numerical Methods, and Introduction to Discrete Structures. Coursework in Numerical methods was at the graduate level.
- Part of faculty team to develop course curriculum, select textbooks and standardize grades.
- Actively participated in Calculus committee to standardize curriculum and grading.

Rensselaer Polytechnic Institute (2006 – 2010)
Teaching Assistant, Research Assistant, Instructor (summer)
- Calculus I and II (for scientists and engineers, for business students) Recitation Instructor with grading responsibilities: developed and delivered recitation lectures to expand on course material not covered by professor, developed short exams, developed long exam rubrics, graded short and long exams, maintained grade book using online blackboard system, maintained recitation website.
- Calculus I Course Instructor (Summer 2007): prepared and delivered lectures. Developed curriculum for course. Developed and graded examinations.

SAIC (formerly SET Corporation) (2008)
Summer Intern (statistical signal processing)
- Project intern for $50M DARPA program CounterBomber®.
- Surveyed a variety of statistical methods for development of a feature detection algorithm.
- Assisted with Polarimetric calibration and focusing of data collected from an active radar system composed of quasi-collocated antennas of varying bandwidths.

- Investigated, coded (in Python), and tested algebraic-computational methods to assist in peak (target) detection and characterization.
- Developed a method to find an approximation of the radar data phase function to remove residual video phase noise.
- Determined the most effective and efficient target-focusing algorithm.

Committee Member and Student Supervision

Lorenzo, N. *Inversion of rough surface parameters via polarimetric synthetic aperture radar.* Dissertation, Rensselaer Polytechnic Institute, 2019. Print.
Keith, S. *Discrimination Between Child and Adult Forms Using Radar Frequency Signature Analysis*, Thesis, Air Force Institute of Technology, 2013. Print.

Past Large Grant Support

October 2011-October 2015, (Principal Investigator, 100%) "Detection and Imaging Underground Facilities using Synthetic Aperture Radar."
Air Force Office of Scientific Research, Laboratory Research Initiative (Review)
Annual Direct Cost $164K; Total Direct Cost $492K

February 2011-October 2015 (Principal Investigator, 100%)
"Small Human Discrimination from Standoff"
Air Force Research Laboratory, Commanders Research Development Fund (Review)
Total Direct Cost $2.275M

Awards

Nominee, Charles Ryan Memorial Basic Research Award, 2015
RYM Division Junior Leadership Award, 2014
RY Directorate Civilian of the Quarter Award, 2013
RYM Division Civilian of the Quarter Award, 2013
RYM Division First Quarter Team Award, 2012
Women of Color in STEM, National Student Leadership Award, 2010
Research Fellowship, National Science Foundation – Research Experience for Undergraduates
College of Natural and Agricultural Sciences Dean's Fellowship 2005
Computer Science, Engineering, and Mathematics Scholarship (CSEMS) 2004-2005

Local and National Service

Pi Mu Epsilon, Honorary National Mathematics Society, Member 2008-Present
American Mathematical Society, Member 2013-Present
Junior Force Council, Sensors Directorate President, 2012-2014
Society for Hispanic Professional Engineers, Member 2010-Present (past Ohio SW regional President)

Society for Industrial and Applied Mathematics, 2007-Present, Member, Positions Held: President and Vice-President of the RPI Chapter.
Society for the Advancement of Chicanos & Native Americans in the Sciences, 2005-2008, Member.
Volunteer Tutor, Mathematical Sciences, Rensselaer Polytechnic Institute, Fall 2008
Minority Student Recruitment, Rensselaer Polytechnic Institute, 2007-Present

Consulting Work

Research consultant, IRB protocol developer, Proposal Writer, Scientific Editor (2015 – Present)

CURRENT CLIENTS

ScienceDocs INC. Editor and DoD Grant Writer 06/2018–Present
IRB protocol writing/editing. Edit mathematics-based scientific documents. DoD/NSF/NIH Grant Writer. Consultant for applied math curriculum development.

Rhine Language Editing Scientific Editor 01-2018–present
Scientific Editor for math, engineering and physics. I specialize in editing scientific documents written by ESL writers.

PAST CLIENTS

Albanese Defense and Energy Development, LLC. Mathematics Research. 05/2021-09/2021
Cambridge Proofreading LLC 02/2015-12/2019
Edited highly technical scientific documents in math, physical science, and engineering.
Shmoop University 01/2015-03/2017
Freelance science and technology curriculum writer.
AJE - American Journal Experts 01/2017–08/2017
Edited scientific journal articles, theses, and other technical documents.

Professional Certifications

Systems Planning, Research, Development and Engineering, Science and Technology Level 1 Manager (2010)
Systems Planning, Research, Development and Engineering, Science and Technology Level 2 Manager (2013)

Skills and Programming Languages

Matlab (Advanced); Python (Intermediate); Latex (advanced); MS Office [Word, Excel, PowerPoint] (Advanced); C++ (Beginner); R (Beginner); Java (Beginner); MySQL (Beginner)

Academic Publications

Miranda, A., Keith, S. and Wang, L. *A non-Doppler biometric radar system*, In progress, 2021.
Miranda, Analee M, Wang, Loria and Keith, Stephanie R. (2018). *Biometric authentication using wideband UHF/VHF radar* (U.S. Patent No. 10,690,766). U.S. Patent and Trademark Office.
Wang, L., Calderon, B., Martinez, M.E., Jarusiewic, R., Starr, L., Poth, R., Conley, P., and Miranda, A. *A comparison of theoretical, computational, and experimental human electromagnetic scattering at VHF and UHF*, Proceedings of the IEEE National Aerospace and Electronics Conference, July 2014.
Miranda, A. and Cheney, M., *Imaging moving objects from multiply scattered waves and multiple sensors*, Inverse Problems, 2013, Vol. 29, No. 05, pp. 4012
Miranda, A. and Cheney, M., *Imaging with Waves Bounced from a Dispersive Reflector*, Proceedings of the IEEE Radar Conference, May 2012
Miranda, A. and Cheney, M., *Imaging moving objects in a multipath environment using multiple sensors*, International Conference on Electromagnetics in Advanced Applications (ICEAA), IEEE Express, 2011 pp. 227 – 230
Miranda, A. *Imaging moving objects in a multipath environment using multiple sensors*, Dissertation, Rensselaer Polytechnic Institute, 2010. Print

Invited talks, Conferences without proceedings, Proffered communications

Miranda, A. Keith, S., Erdman, G., *Age classification using human electromagnetic scattering at Ultra High Frequency*, Joint Mathematics Meetings, Invited presentation, January 2015
Miranda, A. Keith, S., Voccola, K., *Human age classification using Radar*, Tri-service Radar Conference, Invited presentation, June 2012
Miranda, A., *Radar Imaging and Feature Detection of Biological Media*, 2012 SIAM Conference on Imaging Science, May 2012
Miranda, A. and Cheney, M., *Multiple input multiple output diversity in a multipath environment part 2*, Air Force Orbital Resources Ionosphere Conference, 2010
Miranda, A. and Cheney, M., *Multiple input multiple output diversity in a multipath environment part 1*, New York Conference on Applied Mathematics, 2009
Miranda, A. and Lvov, Y., *Positive Lyapunov exponents of the double pendulum*, Society for Advancement of Chicanos & Native Americans in Sciences (SACNAS) National Conference, 2007
Miranda, A. and Wu, J., *Structure and surface energy of polymer protected nanoparticles in solution by density functional theory*, Society for Advancement of Chicanos and Native Americans in Sciences (SACNAS) National Conference, 2005
Miranda, A. and Baez, J., *Math, physics, and the 6j symbols*, SCCUR 2005
Miranda, A. and Wu, J., *Structure and surface energy of ligand protected nanoparticles in polymeric solutions by density functional theory*, AICHE National Conference 2005

Writing samples (media, education, and op-ed)

1. https://sinews.siam.org/Details-Page/qa-with-nihs-susan-gregurick
2. https://sinews.siam.org/Details-Page/qa-with-onrs-reza-malek-madani

3. https://sinews.siam.org/Details-Page/qa-with-afosrs-young-investigator-program-awardee-kaitlyn-muller
4. https://www.shmoop.com/computer-science/radar/
6. https://www.shmoop.com/computer-science/sonar/