
Sonia Martínez

University of California, San Diego

OFFICE ADDRESS

Department of Mechanical & Aerospace Engineering
University of California, San Diego
9500 Gilman Dr La Jolla, CA 92093-0411

Phone: (858) 822-4243
Fax: (858) 534-7078
Email: soniamd@ucsd.edu
Website: <http://muro.ucsd.edu/sonia/>

EDUCATION

University Carlos III of Madrid, Madrid, Spain

Ph.D, Engineering Mathematics, May 2002

Thesis: *Geometric Methods in Nonlinear Control Theory with Applications to Robotic Locomotion Systems*

Adviser: Prof. Manuel de León Rodríguez

University of Zaragoza, Zaragoza, Spain

B.S, Mathematics (5 year-long degree), July 1997

RESEARCH INTERESTS

Dynamic systems and control; Nonlinear, hybrid, and geometric control theory; Optimization; Distributed Algorithms; Data-driven control and optimization. Applications to networked control systems such as multiple robotic swarms, power, and transportation networks.

CITATION METRICS (September, 2023)

Thomson Reuters (ISI): H-index 25, sum of citations 4323

Google Scholar: H-index 43, sum of citations 16336

EXPERIENCE

Full Professor, Mechanical and Aerospace Engineering

University of California, San Diego, CA

(Jul 2014 on)

Associate Professor, Mechanical and Aerospace Engineering

University of California, San Diego, CA

(Jul 2010–Jun 2014)

Assistant Professor, Mechanical and Aerospace Engineering

University of California, San Diego, CA

(Jan 2006–Jun 2010)

Fulbright Postdoctoral Scholar,

Center for Control Engineering and Computation

University of California, Santa Barbara, CA

(Aug 2004–Dec 2005)

Coordinated Science Laboratory

University of Illinois at Urbana-Champaign, Urbana, IL

(Sep 2003–Aug 2004)

Visiting Assistant Professor, Department of Applied Mathematics

Technical University of Catalonia, Spain

(Sep 2002–Sep 2003)

Visiting Scholar, Coordinated Science Laboratory

University of Illinois at Urbana-Champaign, IL

(Apr 2001–Jul 2001 & Aug 2002)

Visiting Scholar, GRASP Laboratory
University of Pennsylvania, PA

(Aug 2000–Dec 2000)

HONORS AND AWARDS

2021 Outstanding paper award of the IEEE Control Systems magazine of the IEEE Control Systems Society December 2021, for the paper “Tutorial on Dynamic Average Consensus: The Problem, Its Applications, and the Algorithms,” co-authored with Solmaz S. Kia, Brian Van Scoy, Jorge Cortés, Randy Freeman, and Kevin M. Lynch,

Jacobs Faculty Scholar, July 2020, Jacobs School of Engineering, UC San Diego,

IEEE Fellow, class of 2018, for contributions to geometric mechanics and distributed control,

2006 Google Classic Paper in the Automation and Controls area: The paper “Robust rendezvous for mobile autonomous agents via proximity graphs in arbitrary dimensions” has been included by Google Scholar in the top 3 most cited articles that were published 10 years earlier (received in 2017)

2008 Outstanding paper award of the IEEE Control Systems magazine of the IEEE Control Systems Society December 2008, for the paper “Motion Coordination with Distributed Information,” co-authored with J. Cortés and F. Bullo,

NSF CAREER Award,

NSF, Civil, Mechanical and Manufacturing Innovation, Control Systems program, 2007-2012

Faculty Career Development Program Award,

Award 2007-2008 by UC San Diego

Ramón y Cajal awardee,

Ramón y Cajal Program, Spanish Ministry of Science and Technology, 4th position in Mathematics, 2003

Fulbright Postdoctoral Fellowship,

Fulbright Comision and Ministry of Education, Culture and Sports, Madrid, Spain, 2003-2005

Best Student-Paper Award,

2002 IEEE International Conference on Decision and Control, Las Vegas, Nevada, USA, 2002

FPI Graduate Fellow,

Fellowship of the Spanish Ministry of Education and Culture, Madrid, Spain, Jan 1998-Dec 2001

PLENARY AND OTHER INVITED LECTURES

Keynote speaker at the Symposium on Complex and Interconnected Systems, FNHW Campus, Brugg-AG, Switzerland, September 26, 2023

Plenary speaker at the SIAM Conference on Control Theory and Its Applications, July 2023

Plenary speaker at the American Control Conference, July 2020

Invited speaker at the Workshop on “Resiliency and Controllability of Large-Scale Systems: a Network-Theoretic Approach”, IEEE Conference on Decision and Control, 2019

Keynote speaker at the “International Symposium on Multi-Robot and Multi-Agent Systems (MRS),” USC, LA, December 2017

Invited speaker at the “Adaptive Network Dynamics Workshop,” Nanosciences Institute, UC Santa Barbara, December 2016

Invited speaker at the “First So-Cal Robotics Symposium,” UC San Diego, April 2016

Invited speaker at the 2016 Workshop on “Control and Observability of Network Dynamics,” Mathematical Biosciences Institute, The Ohio State University, April 2016

Invited speaker at the 2014 RSS Workshop on “Communication Aware Robotics,” University of California at Berkeley, July 2014

Invited speaker at the “2013 Allerton Conference,” University of Illinois at Urbana-Champaign, September 2013

Keynote speaker at the “1st Workshop on Wireless Intelligent Sensor Networks (WiSeNet),”

Duke University, June 2013

Plenary speaker at the “3rd IFAC Workshop on Distributed Estimation and Control of Networked Systems (NECSYS),” Santa Barbara, September 2012

Invited speaker at the workshop “The geometry of mechanics, field theory, and control a workshop celebrating the 65th birthday of Miguel Munoz Lecanda,” December 2011

Invited speaker at the 2011 IROS Workshop “Redundancy in Robot Manipulators and Multi-Robot Systems,” September 2011

Plenary speaker at the “2011 Santa Barbara Workshop: Decision, Dynamics, and Controls in Multi-Agent Systems,” June 2011

Invited Speaker CONNECT Frontiers in Science and Technology Speaker, June 2009, San Diego

Plenary Speaker at 28th Benelux Conference on Systems and Control, March 2009, Spa, Belgium

Invited Speaker at the “2009 Winter School in Chemical Discrimination and Localization using Biologically Based Olfactory Processing,” January 2009, San Diego

Plenary Speaker at the 4th ERA, Encuentro Regional Academico, organized by the CITEDI, Tijuana, Mexico

Invited Speaker in the minisymposium “Recent advances in algorithms and applications of centroidal Voronoi tessellations and optimal quantization.” 2008 SIAM Annual Meeting, July, 2008

Invited Speaker in the workshop “Algorithmic equivalences between biological and robotic swarms,” in the 2007 Robotics Science and Systems conference, Atlanta, June 2007

Plenary Speaker in the Conference Series “Women: an innovative force in science,” organized by the Royal Spanish Mathematical Society, December 2007

Invited Speaker at the International Symposium “The Frontiers of Mathematics”, June 2007 organized by the Spanish Academy of Sciences and the Spanish Ramon Areces Foundation

INVITED LECTURES AT UNIVERSITIES AND RESEARCH CENTERS (last 5 years)

UC Irvine (2023); Hich Council for Scientific Research (2023); UC Santa Cruz (2022); University of Michigan (2022); Louisiana State University (2021); University of Illinois, (2021); University of Princeton, (2020); University of Texas, San Antonio (2019); Georgia Tech (2019);

PROFESSIONAL SERVICE

Editor in Chief of the *IEEE Open Access Control Systems (IEEE OJ-CSYS)* journal (2021 –present);

Editor for surveys in *Automatica* (2020 –present);

Senior Editor of the *IEEE Transactions on Control of Networked Systems* (2016-2020;)

Associate Editor of two special issues at the *IEEE Control Systems* magazine on *Distributed Control and Estimation of Robotic Vehicle Networks*; of the *IEEE Transactions on Control of Networked Systems* (2013-2016;); of the *Journal of Geometric Mechanics* (journal of the AIMS 2009-present) of the *European Journal of Control* (Hermes Science Publications now Elsevier, 2011-2013;); *Journal of Control Science and Engineering* (Hindawi Publishing Corporation 2009-2011;)

Program Committee member; of 2016 WAFR, the 2016 International Conference on the Foundations of Robotics; of ICCPS 2015, the International Conference on Cyber-Physical Systems; of NECSYS 2015, International Conference on Distributed Estimation and Control of Networked Systems; of 2015 WAFR, 2015 International Workshop on the Foundations of Robotics; of 2014 WAFR, the 2014 International Workshop on the Foundations of Robotics; of the 21st International Symposium on Mathematical Theory of Networks and Systems, MTNS 2014; of the 2014 ICCPS, International Conference on Cyber-Physical Systems; of the 2013 International Workshop on Cyber-Physical Systems and its Computing and Networking Design; of the 2013 and 2012 NECSYS, Distributed Estimation and Control of Networked Systems; and Area Editor of the 2009 IEEE International Conference on Decision and Control; of the 2012 American Control Conference; of the 2012 WAFR, International Workshop on Foundations in Robotics; of the 2008, 2011, and 2012 ICINCO, International Conference on Informatics in Control, Automation and Robotics; of the 2009 International Conference on Robotic

Wireless Sensor Networks (RWSN 2009); of the 2009 Multi-Conference on Systems and Control; of ROBOCOMM 2007, first International Conference on Robot Communication and Coordination;

Best student paper award committee of the 2008 IEEE International Conference on Decision and Control; of the 2016 IEEE International Conference on Decision and Control;

Chair of the IEEE Control Systems magazine best paper award committee; 2018,2019, 2020;

Member of the best paper award committee of the IEEE Control Systems Letters, 2021

Member of the best paper award committee of the Annuals Reviews in Control journal, 2020

Committee member to evaluate IEEE Fellows for the CSS, class of 2021, 2023, 2024;

Committee member of the 2022 TC Outstanding Student Paper Award of the CSS Technical Committee on Networks and Communication Networks, 2022

Editorial Board member of the IEEE Control Systems Society, 2007-2012.

Conference Co-Chair of the SIAM Control Theory and Its Applications, SIAM CT21

Organizing Committee member of SIAM CT 2017, SIAM Conference on Control and its Applications

Conference Co-Chair of ICCPS 2017, 8th International Conference on Cyber-Physical Systems.

Organizing Committee member of ICCPS 2016, 7th International Conference on Cyber-Physical Systems, as Program Co-Chair.

Organizing Committee member of ROBOCOMM 2009, second International Conference on Robot Communication and Coordination, as publicity chair.

Local Arrangements Committee member of the 2007 International Conference on Intelligent Robotics and Systems (IROS 2007), October 29 - December 2, 2007.

Reviewer of AFOSR (2018); of the Israel Science and Technology Foundation (2014); of the AFOSR, Young Investigator Award (2012) and regular Controls Program of the AFOSR (2012); reviewer NSF, Civil, Mechanical and Manufacturing Innovation (CMMI) (2006, 2008, 2011, 2014); NSF-CISE (2008); NSF-CNS (2012); of the Natural Sciences and Engineering Research Council of Canada (NSERC) Discovery Grant (2009)

Reviewer, Mathematical Reviews; SIAM Journal on Control and Optimization; IEEE Transactions on Automatic Control; IEEE Transactions on Robotics; International Journal of Control; Automatica; Springer-Verlag; Journal of Mathematical Physics; Journal of Engineering Mathematics; Journal of Geometry and Physics; IEEE Sensors Journal; International Journal of Robust and Nonlinear Control; the Robotics and Automation magazine; Journal of Intelligent and Robotic Systems; IEEE Journal on Selected Areas in Communications; IEEE Control Systems Magazine; Gazette of the Spanish Royal Mathematical Society; Autonomous Robots; Transactions on Parallel and Distributed Systems; Math Programming Series B; Journal of Geometric Mechanics; Naval Research Logistics; International Journal of Robotics Research; Systems and Control Letters

Reviewer, American Control Conference; IEEE International Conference on Decision and Control; IEEE International Conference on Robotics and Automation; European Control Conference; IEEE MultiConference on Systems and Control; IEEE/RSJ International Conference on Intelligent Robots and Systems; Mediterranean Conference on Control and Automation; 2007 International Conference on Robot Communication and Coordination; International Workshop of Geometry and Physics; 15th IFAC Symposium on Systems Identification; 2009 International Workshop on Robotic Wireless Sensor Networks; MilComm 2010; ICINCO (2008, 2011, 2012); NECSYS (2012, 2013, 2014); WAFR (2012, 2014); IEEE Int. Conference on Computing, Networking and Communications (2013);

Member Royal Spanish Math. Society, 2000-2023; Member IEEE (Control Systems Society and Robotics and Automation Society), 2001-present, Member of SIAM, Activity group on Control and Systems Theory (2008-present)

UNIVERSITY SERVICE

Department vice chair, 2023;

Chair of MAE council; 2021–2022;

Member of ad-hoc committee to review dean Pisano's file;

Member of the Committee of Extended Studies and Public Service, 2020–2021; 2021–2022; 2022–2023

Member of the Division Representative Assembly, in representation of the Eleanor Roosevelt College, 2020–2021;

Member of the Committee to Review Ivan Evans as Provost of Eleanor Roosevelt College (2019 - 2020)

Representative of the Division Representative Assembly for MAE, 2019–2020

Member of the search committee for the Director of the Center for Energy Research (CER), an organized research unit at UC San Diego 2019;

Alternate representative of the Division Representative Assembly for MAE, acting in replacement of representative in Winter, Spring 2018, and Winter 2019;

Member of MAE ABET committee (2016-2017, 2017-2018, 2018-2019, 2019-2020);

Member of the Undergraduate Affairs Committee (2010-2011, 2011-2012, 2012-2013, 2013-2014);

Member of the Graduate Affairs Committee at MAE (2006-07, 2007-08, 2014-2015);

Member of the Penner Lecture Committee at MAE (2015-2016);

Member to review the university librarian, Brian Schottlaender, (WI, SP 2014);

MAE 205 Dynamic Systems and Control Seminar at MAE (Winter 2007, Fall 2014, Spring 2019, Spring 2020);

Member of the Women in Science and Engineering group at UCSD (2007 - 2013, 2016-2017, 2017-2018);

Co-Chair of the Women in Science and Engineering group at UCSD (2014 - 2016)

TEACHING ACTIVITIES

MAE 146 Introduction to Machine Learning, course for undergraduate students
taught during Spring 2021; Spring 2023

MAE 145 Introduction to Robotic Planning and Estimation, course for undergraduate students
taught during Winter 2018, Winter 2019; Winter 2020; Winter 2021; Winter 2022

MAE 108 Probability and Statistical Methods for Mechanical and Environmental Engineering,
taught during Spring 2014, Spring 2015; Spring 2016; Spring 2017;

MAE 140 Linear Circuits, undergraduate elective course, taught during Fall 2010, Winter 2011; Fall 2011;
Winter 2013

MAE 242 Robot Motion Planning and Learning, graduate course taught during Spring 2010;
Fall 2013; Fall 2015; Fall 2016; Spring 2020; Spring 2022; Fall 2022

MAE 143A Signals and Systems, undergraduate non-elective course, taught during Winter 2007,
Winter 2008, Winter 2009, Spring 2009, and Winter 2010;

MAE 281B Nonlinear Control systems, graduate course taught during Spring 2006, Spring 2007;

MAE 247 Cooperative Control of Multi-Agent Systems, graduate course taught during Spring 2008;
Spring 2011; Fall 2014; Spring 2018; Fall 2020;

MAE 289A Real Analysis for Applications, graduate course;

Winter 2015; Winter 2016; Fall 2018; Fall 2021;
MAE 289B Mathematical Analysis for Applications, graduate course taught during Spring 2012;
Spring 2013; Winter 2014;
Minicourse on Cooperative Control of Robotic Systems at the 28th Benelux Conference on Systems
and Control; Winter 2009;
Minicourse on Cooperative Control of Robotic Systems at the 2010 JAE School of Mathematics
Universidad Autonoma de Madrid, July 2010;

Postdoctoral RESEARCH ASSOCIATES

Yu Ru (2010 - 2012), now at General Electric, Shanghai, China
Solmaz Sajjadi-Kia (2012 - 2014). UC Presidential Postdoctoral Fellow, funded jointly by L3-Communications
and the University of California. Now an associate professor at the
department of Mechanical and Aerospace Engineering, University of California Irvine;
Mike Ouimet (2014 - 2015). Funded by L3-Communications. Now Senior
Engineer at the SPAWAR Laboratory, San Diego.
Chin-Yao Chang (2016 - 2018). Funded by NODES ARPA-e project. Now an Engineer at NREL.
Dariush Fooladivanda (2018 - 2019). Funded by ARPA-e NODES project.
Dimitris Boskos (2018 - 2020). Funded by DARPA project.
Shenyu Liu (2020 - 2022). Funded by AFOSR project.
Mohammad Khajenejad (2022 - present). Funded by ONR and ARL projects.

GRADUATE STUDENTS

Sudhanshu Sarkar, (UCSD MAE, MS Thesis student, Fall 2023–present)
Ben Kwang (UCSD MAE, PhD student, 2023 - present)
Neilabh Banzal (UCSD MAE, PhD student, 2023 - present);
Nirabhra Mandal (UCSD MAE, PhD student, 2022 - present);
Brandon Bao (UCSD MAE, MS. student, 2021 - present);
Yunhai Han (UCSD MAE, MS. student, 2020 - 2021); now PhD student at Georgia Tech,
Scott Brown (UCSD MAE, PhD student, 2020 - present);
Pengcheng Wu (Joint UCSD - SDSU doctoral program, 2019 - present);
Paul Lathrop (UCSD MAE, PhD student, 2019 - present);
Yasuhiro Toyoda (UCSD MAE, MS. student 2019 - 2020) now ;
John Davis (UCSD MAE, MS. student, 2019 - 2020);
Javier Ruiz (UCSD MAE, MS. student, 2017 - 2019); now at LANL.
Parth Paritosh (UCSD MAE, Ph.D student, 2017 - present);
Aamodh Suresh (UCSD MAE, Ph.D student, 2016 - 2022) now a postdoc at DEVCOM, ARL;
Dan Li (UCSD MAE, Ph.D student, 2016 - 2021); now a Research Scientist at Rockwell Automation;
Tor Anderson (UCSD MAE, Ph.D. student, 2015 - 2021);
Vishaal Khrisnan (UCSD MAE, Ph.D. student, 2014 - 2019). Now a postdoctoral student at Harvard Univer-
sity.
Francis Joseph (MS thesis student, 2016 - 2018, co-advised with Prof. Tolley);
Beth Boardman (UCSD MAE, Ph.D. student, 2012 - 2017). Now a senior engineer at LANL;
Evan Gravelle (UCSD MAE, Ph.D. student, 2012 - 2017). Now a senior engineer at Shield AI;
Eduardo Ramírez (UCSD MAE, Ph.D. student, 2012 - 2017). Now a senior engineer at Continental AG;
Jonathan Hetchbauer (Visiting MS student, Spring 2016);
Andres Cortés (UCSD MAE, Ph.D. student, 2011 - 2015). 2015 Outstanding Graduate Student Award.
Now Staff Optimization Engineer at Fluence Energy;
Hamed Shisheh Foroush (UCSD MAE, Ph.D. student, 2010 - 2014);
Tianjia Chen (UCSD MAE, MS student, 2012 - 2013);

Eduardo Montijano (Universidad de Zaragoza, Spain, visiting Ph.D. student Spring 2009). Now an Assistant Professor at the Centro Universitario de la Defensa, Zaragoza, Spain;
Teymur Sadikhov (UCSD MAE, Ph.D. student, 2008-2010);
Minghui Zhu (UCSD MAE, Ph.D. student, 2007-2011). 2011 Outstanding Graduate Student Award in MAE.
Now an associate professor in the department of Electrical Engineering, Penn State University;
Andrew Kwok (UCSD MAE, Ph.D. student, 2006- 2011). Now at Criteo, Paris, France;
Sara Susca (UCSB MAE, Ph.D. student, 2005 -2007), co-advised with F. Bullo. Now at JPL-NASA;
Sulema Aranda (UIUC, MS student, 2003-2004), co-advised with F. Bullo;

Undergraduate RESEARCH STUDENTS

Matt Fan, Regents Scholar, September 2023–present;
Guillem Pascual, visiting student, UPC, Spain, September 2023–present;
Zeyu Chen, MAE student, Spring 2023 –present;
Saimai Lau, MAE student, Summer 2023 –present;
Christopher Galarze-Gonzales, GEAR student, Winter-Spring 2023;
Pranav Vijay, CSE student, Fall 2022;
Natalie Nguyen, MAE student, Fall 2022;
Pablo de Juan (visiting student UPC, Spain, Winter 2020-Summer 2021);
Cole Tynan Woods (SRIP program, summer 2019);
David Glukhov (Winter 2021, Spring 2021);
Brandon Bao (Spring 2021);
Simon Hu (SRIP program summer 2019);
Jia Qiu (SRIP program summer 2019);
Haifen Lan (summer 2019);
Chidi Ewenike, Summer Training Academy for Research in the Sciences (STARS) Scholar, (Summer 2017);
Javier Ruiz, Summer Training Academy for Research in the Sciences (STARS) Scholar, (Summer 2016);
Julio Martinez, UCSD Math undergraduate student (Spring 2016);
Sumega Mandadi, UCSD MAE undergraduate student (Spring 2015);
Randy Lewis, UCSD Regents Scholar, (2013-2014);
Vu Lihn, Summer Training Academy for Research in the Sciences (STARS) Scholar, (Summer 2013);
Xian X. Li, UCSD, MAE undergraduate student, (Spring 2013);
Daniel Heidemann, UCSD Regents Scholar, (2012-2013); continued work in the lab during 2013-2014;
Caris Moses, Summer Training Academy for Research in the Sciences (STARS) Scholar, (Summer 2012);
Ambrish Patel, MAE UCSD, (Winter 2009, Spring 2009);
John Nguyen, MAE UCSD, (Spring 2009);

High-School RESEARCH STUDENTS

Pavel Latin, Southwest High School student, ENLACE program at UC San Diego, (Summer 2017);

OUTREACH and DIVERSITY PROMOTING ACTIVITIES

Co-Chair of the Women in Science and Engineering (WISE) Committee at UCSD, 2014-2015,
Member of the Women in Science and Engineering (WISE) Committee at UCSD, 2006, 2007, 2008, 2009, 2010,
2011, 2012, 2013, and 2014.
Winter NSF-CAMP: Coffee and conversation with Faculty. Met with graduate students during 2 hours to
talk about grad school, job as a professor, etc.
Participation in the panel “managing work and life,” organized by Olivia Graeve at the 2011 Conference of
the Society of Hispanic Professional Engineers (SHPE) in Anaheim, CA, October 2011. Member of the
SHPE since 2011.
Recruitment and mentoring of 4 underrepresented students. This includes a female postdoctoral student,

Solmaz Sajjadi-Kia, January 2012 - present. Solmaz won a UC Presidential Fellowship in 2015.

FUNDING

- ARO-BAA. *Time-Varying Actuation and Structure Modification for Assessing and Enhancing Network Resilience*. PI: Jorge Cortés and Sonia Martínez. Total funding: \$612,970. June 2023 - July 2025.
- ARL Program: Tactical Behaviors for Autonomous Maneuver Collaborative Research (TBAM-CRP). *Distributed Routing and Control Barrier Functions for Multi-Agent Tactical Navigation*. PI: Sonia Martínez, Co-PI: Jorge Cortés. Total funding: \$566,282. July 2022-June 2024.
- ARO Special notice 002: AI/ML Research for Expeditionary Maneuver and Air/Ground Reconnaissance. *Distributed learning for Multi-agent Cooperative Control*. PI: Sonia Martínez. Total funding \$497,282.00. To start September 2022 - August 2025.
- NSF grant. *DER Connect remote research infrastructure*. PI: Jan Kleissl. Co-PIs: Jorge Cortés, Raymond de Callafon, Rajesh Gupta, Sonia Martínez. Total funding is \$39,000,000 and mostly devoted to infrastructure.
- AFOSR grant. *On resiliency of dynamic networks in adversarial environments*. PI: Fabio Pasqualetti (UCR). August 2019 - 2022. Co-PI at UC San Diego Sonia Martínez, and Jorge Cortés. Corresponding individual amount is \$500,000.
- ONR grant. *Distributed and Privacy-Preserving Learning in Multi-Agent Systems* PI: Sonia Martínez. \$658,120.00. August 2019 - July 2024.
- ONR SBIR/STTR Phase II, part 1 and 2 contracts. *Data Architecture Enabling Robust Cooperative Autonomy with Minimal Information Exchange*. Lead Company: Orbit Logic, Colorado. PI at CU Nisar Ahmed. PI at UC San Diego Sonia Martínez. \$298,981.00 (UCSD amount). March 2019 - December 2022.
- ARPA-e cooperative agreement, *Grid Optimization Competition* PI: Chin-Yao Chang at NREL. Co-PI at UCSD Sonia Martínez. \$ 60,000 (UCSD amount). 2018 - 2019.
- DARPA Lagrange grant *Distributed Robust Data-Driven Control and Optimization*. PI: Sonia Martínez, Co-PIs: Jorge Cortés at UCSD and Daniel Tartakovsky at Stanford University. \$ 661,326. 2018 - 2019.
- 2018 AFOSR grant, *Analysis and design of large-scale multi-agent systems via continuum spatial approximations*, Single PI: Sonia Martínez, MAE - UCSD. \$ 420,000. 2018 - 2020.
- The City of San Diego grant *Forecast and Control of Transportation Networks* PI: Sonia Martínez, Co-PI: Daniel Tartakovsky, MAE - UCSD. \$ 75,000. 2017 - 2018.
- Northrop Grumman gift funds *Human-swarm coordination* PI: Jorge Cortés, Co-PI: Sonia Martínez, MAE - UCSD. \$ 75,000. 2017 - 2018.
- ARPA-e cooperative contract *Distributed grid control of flexible loads and DERs for optimized provision of synthetic regulating reserves* PI: Sonia Martínez, Co-PIs at UC San Diego, U of Illinois, and Typhoon Inc, a team of 8 people plus students/postdocs. \$ 2,886,437. Oct 2016 - December 2019.
- Los Alamos National Lab research grant *Gloveport Manipulator for Glovebox Automation*. Single PI: Sonia Martínez. \$ 340,000. 2017 - 2012 present. (Renewed for another 4 year period in 2018.)
- NSF CMMI grant *Analysis and design of robust control schemes for networks of non-uniform infrastructure responding to aggregated user demand* Single PI: Sonia Martínez. Total grant amount is \$ 300,000. 2014 - 2018.

- L-3 Communications gift funds, awarded through the Cymer Center for Controls and Dynamics at UCSD. Topic: *Distributed estimation over networked systems* PI: Sonia Martínez. \$ 150,000. 2012 - 2014.
- 2012 AFOSR grant *Distributed learning, extremum seeking, and model-free optimization for the resilient coordination of multi-agent adversarial groups*. PI at UCSD: Sonia Martínez, Co-PI Miroslav Krstic. Total funds for UCSD \$ 682,689. 2012 - 2016
- NSF EECS grant *Optimal sizing and control of distributed storage devices in grid-connected photovoltaic systems*. PI at UCSD: Sonia Martínez, Co-PI Jan Kleissl. Total funds for UCSD \$ 300K. 2012 - 2016
- Collaborative Grant *CPS Medium Collaborative Research: Physical modeling and software synthesis for self-reconfigurable sensors in river environments*. CNS NSF program. Single PI at UCSD: Sonia Martínez, funds for UCSD \$ 299,997. 2009 - 2013.
- *Efficient multi-vehicle coordination for distributed sensing and estimation*. NSF CAREER Award. Single PI: Sonia Martínez. \$ 400,000. 2007-2013
- *RI: Adaptive motion coordination of multiple unmanned vehicles for the monitoring of aerosol-dust-cloud interactions*. IIS NSF program. Single PI: Sonia Martínez. Three year grant with a total of \$ 270,734. 2007-2011

JOURNAL PAPERS (in inverse chronological order)

- (JP-96) S. Liu, S. Martínez, and J. Cortés. Stabilization of linear cyber-physical systems against attacks via switching defense. *IEEE Transactions on Automatic Control*, 2023. To appear
- (JP-95) D. Boskos, J. Cortés, and S. Martínez. High-confidence data-driven ambiguity sets for time-varying linear systems. *IEEE Transactions on Automatic Control*, 2023. To appear
- (JP-94) D. Li, D. Fooladivanda, and S. Martínez. Data driven predictive control for a class of uncertain control-affine systems. *International Journal on Robust and Nonlinear Control*, 33(2):1284–1315, 2023
- (JP-93) A. Suresh, A. Taylor, L. Riek, and S. Martínez. Robot navigation in risky, crowded environments: Understanding human preferences. *IEEE Robotics and Automation Letters*, 8(9):5632–5639, 2023
- (JP-92) P. Lathrop, B. Boardman, and S. Martínez. Quantum search approaches to sampling-based motion planning. *IEEE Access*, 8:5632–5639, 2023
- (JP-91) M. Khajenejad and S. Martínez. Guaranteed privacy of distributed nonconvex optimization via mixed-monotone functional perturbations. *IEEE Control Systems Letters*, 7:1081–1086, 2022
- (JP-90) V. Krishnan and S. Martínez. A multi-scale analysis of multi-agent coverage control. *Automatica*, 145:2545–2550, 2022. DOI: 10.1016/j.automatica.2022.110516
- (JP-89) P. Paritosh, N. Atanasov, and S. Martínez. Distributed bayesian estimation of continuous variables over time-varying directed networks. *IEEE Control Systems Letters*, 6:2545–2550, 2022
- (JP-88) S. Liu, S. Martínez, and J. Cortés. Iterative algorithms for assessing network resilience against structured perturbations. *IEEE Transactions on Control of Network Systems*, 9(4):1816–1827, 2022
- (JP-87) Y. Han and S. Martínez. A numerical verification framework for differential privacy in estimation. *IEEE Control Systems Letters*, 6:1712–1717, 2021
- (JP-86) A. Suresh and S. Martínez. Risk-perception-aware control design under dynamic spatial risks. *IEEE Control Systems Letters*, 6:1802–1807, 2021

- (JP-85) T. Anderson, M. Muralidharan, P. Srivastava, H. Valizadeh Haghi, J. Cortés, J. Kleissl, S. Martínez, and B. Washom. Frequency regulation with heterogeneous energy resources: A realization using distributed control. *IEEE Transactions on Smart Grid*, 12:4126–4136, 2021. DOI: 10.1109/TSG.2021.3071778
- (JP-84) P. Lathrop, B. Boardman, and S. Martínez. Distributionally safe path planning: Wasserstein Safe RRT. *IEEE Robotics and Automation Letters*, 7:430–437, 2021
- (JP-83) F. Boso, D. Boskos, J. Cortés, S. Martínez, and D. M. Tartakovsky. Dynamics of data-driven ambiguity sets for hyperbolic conservation laws with uncertain inputs. 43(3):A2102–A2129, 2021
- (JP-82) S. Liu, S. Martínez, and J. Cortés. Average dwell-time minimization of switched systems via sequential convex programming. *IEEE Control Systems Letters*, 6:1076–1081, 2021
- (JP-81) C.-Y. Chang, S. Martínez, and J. Cortés. Virtual-voltage partition-based approach to mixed-integer optimal power flow problems. *IEEE Transactions on Control Systems Technology*, 29(3):1246–1256, 2021
- (JP-80) T. Anderson and S. Martínez. Distributed resource allocation with binary decisions via Newton-like Neural-network dynamics. *Automatica*, 128, 2021
- (JP-79) A. Suresh and S. Martínez. Planning under risk and uncertainty based on Prospect-theoretic models. *IEEE Robotics and Automation Letters*, 6(2):4133–4140, 2021
- (JP-78) V. Krishnan and S. Martínez. A probabilistic framework for Moving-Horizon Estimation: Stability and privacy guarantees. *IEEE Transactions on Automatic Control*, 66(4):1817–1824, 2021
- (JP-77) D. Boskos, J. Cortés, and S. Martínez. Data-driven ambiguity sets with probabilistic guarantees for dynamic processes. *IEEE Transactions on Automatic Control*, 66(7):2991–3006, 2021
- (JP-76) D. Li and S. Martínez. Online data assimilation in distributionally robust optimization. *IEEE Transactions on Automatic Control*, 66(5):2115–2129, 2021
- (JP-75) B. Boardman, T. Harden, and S. Martínez. Multi-agent motion planning with sporadic communications for collision avoidance. *IFAC Journal of Systems and Control*, 15:100–126, 2021
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ORGANIZED SESSIONS AND SEMINARS

- “Resiliency and Privacy in Control Systems” two invited sessions at the 2022 American Control Conference, San Diego, CA, USA. Sessions co-organized with Mohammad Khajenejad, Scott Brown, and Fabio Pasqualetti, 2022.
- “Distributional Robust Optimization in Control” minisymposium at SIAM CT21, virtual conference, co-organized with Dimitris Boskos and Jorge Cortés,
- “Distributed control in robotic vehicle networks,” session part of SCONES 2017, Boston University, 2017.
- “Distributed control and estimation in robotic vehicle networks,” one-day workshop co-organized with Nisar Ahmed (Colorado University at Boulder) and Jorge Cortés (UCSD) at the 2014 Robotics, Science and Systems (RSS) Conference, Berkeley, 2014.
- “Network security and adversarial learning,” workshop co-organized with Minghui Zhu (UC San Diego) at the 2011 American Control Conference, San Francisco, June 2011.
- “Distributed control of robotic networks”, workshop co-organized with Francesco Bullo (UC Santa Barbara) and Jorge Cortés (UC San Diego) at the 2008 International Conference on Decision and

Control, Cancún, México.

“Environmental sensor networks, theory and practice”, session co-organized with Fumin Zhang (Electrical and Computer Engineering, Georgia Tech at Savannah) at the 2008 American Control Conference, Seattle, WA, June 2008.

“Algorithmic methods in robotics”, session co-organized with Rafael Fierro (University of New Mexico) and Fumin Zhang (Georgia Tech) at the 2008 IEEE International Conference on Robotics and Automation, Pasadena, CA, 2008.

“Geometric control of mechanical systems”, session co-organized with M. Muñoz-Lecanda (Technical University of Catalonia) and B. Langerock (U. Gent) at the XXI International Workshop on Differential Geometric Methods in Theoretical Mechanics, Madrid, Spain, September 2006.

“Motion coordination: models, complexity and algorithms”, session co-organized with Francesco Bullo (UC Santa Barbara) at the 45th IEEE International Conference on Decision and Control, Seville, December 2005.