

# Jorge Cortés

## Curriculum vitae

### February 2018

Mechanical and Aerospace Engineering  
Jacobs School of Engineering  
University of California, San Diego  
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La Jolla, CA 92093

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#### Current Position

Professor (since Jul 2014; Associate Professor Jul 2009–Jun 2014; Assistant Professor Jul 2007–Jun 2009)  
Department of Mechanical and Aerospace Engineering  
University of California, San Diego, CA (Jul 2007–present)

#### Previous Positions

Assistant Professor, Department of Applied Mathematics and Statistics  
University of California, Santa Cruz, CA (Oct 2004–Jun 2007)  
Postdoctoral Research Associate, Coordinated Science Laboratory, College of Engineering  
University of Illinois at Urbana-Champaign, Urbana, IL (Aug 2002–Sep 2004)  
Postdoctoral Research Associate, Systems, Signals and Control Department  
University of Twente, The Netherlands (Nov 2001–Jun 2002)

#### Education

Ph.D., Engineering Mathematics, Universidad Carlos III de Madrid, Spain Dec 2001  
Licenciado, Mathematics, Universidad de Zaragoza, Spain Jun 1997

#### Research Interests

Systems and Control; Cooperative Control and Swarm Robotics; Distributed Network Science; Game Theory; Multi-Agent Coordination in Robotics, Power Systems, and Neuroscience; Geometric and Distributed Optimization; Nonsmooth Analysis; Geometric Mechanics and Control.

#### Citation Metrics (January 27, 2018)

[Thomson Reuters \(ISI\)](#): h-index 28, sum of cites 4247  
[Google Scholar](#): h-index 43, sum of cites 11506

#### Research Awards and Honors

IEEE Fellow, Class of 2014  
IEEE Control Systems Society Distinguished Lecturer, 2010  
Outstanding Reviewer for IEEE Transactions on Automatic Control, 2009  
Young Researcher Prize, awarded by the Spanish Society of Applied Mathematics to the “most promising applied mathematician under 33 born or working permanently in Spain,” 2006  
NSF CAREER Award, Division of Electrical, Communications and Cyber Systems (Power, Controls and Adaptive Networks), 2006  
Ramón y Cajal Program Awardee, Mathematics, ranked 1st, Spanish Ministry of Science and Technology, Madrid, Spain, 2003  
Best Doctoral Dissertation Award, Engineering Mathematics Curriculum, Academic Year 2001-2002, Universidad Carlos III de Madrid, Spain, 2003

AACC O. Hugo Schuck Best Paper Award in the Theory category (w/ C. Nowzari), 2012  
SIAM Review SIGEST selection from the SIAM Journal on Control and Optimization (w/ F. Bullo), 2009  
IEEE Control Systems Magazine Outstanding Paper Award (w/ S. Martínez and F. Bullo), 2008

Best Student Paper Award Winner:

American Control Conference (A. Ganguli -student- and F. Bullo), Minneapolis, Minnesota, 2006  
IEEE Conference Decision and Control (w/ S. Martínez -student- and F. Bullo), Las Vegas, Nevada, 2002

Best Student Paper Award Finalist:

American Control Conference (E. Nozari -student), Milwaukee, Wisconsin, 2018  
American Control Conference (A. Cherukuri -student), Chicago, Illinois, 2015  
American Control Conference (C. Nowzari -student), San Francisco, California, 2011  
American Control Conference (w/ A. Ganguli -student- and F. Bullo), Portland, Oregon, 2005

### **Plenary and Other Invited Lectures**

Plenary Speaker, 7th IFAC Workshop on Distributed Estimation and Control in Networked Systems (Nec-Sys18), Groningen, The Netherlands, Aug 27-28, 2018

Semi-Plenary Speaker, 10th IFAC Symposium on Nonlinear Control Systems (NOLCOS), Monterey, California, Aug 23-25, 2016

Plenary Speaker, 28th Benelux Meeting on Systems and Control, Spa, Belgium, Mar 2009

Plenary Speaker, International Workshop on Global Analysis, Cankaya University, Ankara, Turkey, Apr 2004

Plenary Speaker, 34th Symposium on Mathematical Physics, Torun, Poland, Jun 2002

Invited Speaker

Emphasis Workshop: Control And Observability of Network Dynamics, Mathematical Biosciences Institute, Cleveland, Ohio, Apr 2016

Workshop on Frontiers in Distributed Optimization and Control of Sustainable Power Systems, National Renewable Energy Laboratory, Golden, Colorado, Jan 2016

IMA Thematic Year on Control and Its Applications, Workshop on Analysis and Control of Network Dynamics, Minneapolis, Minnesota, Oct 2015

IMA New Directions Short Course Topics in Control Theory, "Week 2: Distributed Optimization and Control", Minneapolis, Minnesota, Jun 2014

deLeonfest, a Workshop to Celebrate the 60th Birthday of Manuel de Leon and his Research Contributions, ICMAT, Madrid, Spain, Dec 2013

Workshop on the Distributed Control of Large Scale Systems, Pacific Northwest National Laboratory, Richland, Washington, Mar 2013

International Workshop on Recent Developments In Robotics and Control In Celebration of Mark W. Spong's 60th Birthday, UT Dallas, Nov 2012

2012 Southern California Symposium on Network Economics and Game Theory, University of Southern California, Nov 2012

Workshop on Multi-Agent Control Applications, Concordia University, Apr 2012

2011 Santa Barbara Control Workshop: Decision, Dynamics and Control in Multi-Agent Systems, UCSB, Jun 2011

CONNECT Frontiers in Science and Technology Speaker, San Diego, California, Feb 2010

Invited Speaker, Natural Algorithms Workshop, Center for Computational Intractability, Princeton University, Nov 2009

### **Invited Lectures at Universities**

Australian National University (Sep 07), Boston University (Nov 07), ETH Zürich (Nov 14), Georgia Institute of Technology (Feb 14), Ghent University (Belgium, Jun 01 and Aug 05), High Council of Scientific Research (Spain, Dec 06), International Center of Mathematical Meetings (Spain, Sep 06), Massachusetts Institute of Technology (Nov 10), Monterey Bay Aquarium Research Institute (May 05), Montreal Polytechnique (GERAD, Mar 17), Naval Postgraduate School (Nov 05), Queen's University (Canada, Mar 03), Stanford University (Feb 07), Universidad Complutense de Madrid (Spain, Jul 03), Universidad Politécnica de Cataluña (Spain, Feb 01, Feb 02, Jan 03, Jan 04, and Dec 07), University of Arizona (Apr 12), University of California,

Berkeley (MSRI, Mar 07 and Oct 13), University of California, Irvine (Feb 16), University of California, Los Angeles (May 07, Feb 12), University of California, Riverside (Nov 16), University of California, San Diego (Mar 07, Feb 14), University of California, Santa Barbara (Nov 05), University of California, Santa Cruz (Feb 04 and Oct 04), University of Florida (Nov 13), University of Georgia (Feb 03), University of Illinois at Urbana-Champaign (Dec 02, Oct 03, Apr 12, Mar 15), University of Maryland, College Park (Jun 09), University of Minnesota (Apr 04), University of Oklahoma (Apr 17), University of Pennsylvania (Swarms Workshop, May 07 and Apr 11), University of Texas at San Antonio (Apr 16), University of Twente (The Netherlands, Nov 01 and Apr 03), University of Wisconsin-Madison (Feb 04), Yale University (Jan 17).

## Research Grants

### Current

PI in NSF ECCS-1307176, "Self-Triggered Coordination of Robotic Networks", Duration: 9/1/13-8/31/18, Amount: \$290,665

PI in NSF CNS-1329619, "CPS: Breakthrough: Robust Team-Triggered Coordination for Real-Time Control of Networked Cyber-Physical Systems", Duration: 10/1/13-9/30/18, Amount: \$463,607

Co-PI in NSF CNS-1446891, "CPS: Synergy: Triggered Control of Cyber Physical Systems with Communication Channels Constraints", Duration: 1/1/15-12/31/17, Amount: \$1,000,000

PI in AFOSR FA9550-15-1-0108, "Triggered Control for Distributed Optimization and Learning in Networked Multi-Agent Systems", Duration: 5/15/15-5/14/18, Amount: \$421,571

co-PI in ARPA-e NODES DE-AR0000695, "Distributed Grid Control of Flexible Loads and DERs for Optimized Provision of Synthetic Regulating Reserves", Duration: 6/13/16-6/12/19, Amount: \$2,886,437

PI in ONR N00014-16-1-2836, "Exploiting Cheap Computation for Optimal Cooperative Navigation and Lengthened Mission Duration", Duration: 9/1/16-10/31/19, Amount: \$225,000

### Expired

PI in NASA University Aligned Research Program Award TO.030.MM.D., "Distributed formation control strategies for science imaging and interferometry", Duration: 12/1/04-9/30/05, Amount: \$28,406, and Duration: 10/1/05-9/30/06, Amount: \$ 30,298

Co-PI in NSF CNS-0521675, "MRI: Development of an Autonomous Robotic Vehicle Instrument", Major Research Instrumentation initiative, Duration: 10/1/05-3/31/12, Amount: \$360,021

PI in NSF ECCS-0546871, "CAREER: Information-driven distributed coordination of mobile sensor networks in dynamic scenarios", Duration: 3/1/06-2/28/13, Amount: \$400,000

Co-PI in NSF CCF-0829891, "The control landscape of selective cell death", Emerging Models and Technologies initiative, Duration: 9/1/08-8/31/13, Amount: \$900,000

PI in NSF CMMI-0908508, "DynSyst.Special\_Topics: Couplings, network dynamics, and stability of multi-agent systems", Duration: 7/15/09-6/30/13, Amount: \$280,000

PI in NSF CCF-0917166, "NetSE: Small: Collaborative Proposal: A Geometric Computational Approach to Efficiently Deploy and Manage Self-Organizing Wireless Communication Networks", Duration: 8/15/09-7/31/13, Amount: \$250,000

Co-PI in AFOSR FA9550-10-1-0499, "Games, Information, and Deception Exploitation for Adversarial Network Systems", Duration: 7/1/10-6/30/14, Amount: \$918,501

PI in NSF OCE-0941692, "CDI Type-II: Distributed Ocean Monitoring via Integrated Data Analysis of Coordinated Buoyancy Drogues", Duration: 1/1/10-12/31/15, Amount: \$1,359,000

PI in NSF CMMI-1300272, "Robust Distributed Online Convex Optimization", Duration: 4/15/13-3/31/17, Amount: \$280,000

PI in UCSD Contextual Robotics Seed Funding through Northrop Grumman Sponsorship, "Swarm Coordination in Disaster Response Operations", Duration: 6/1/15-5/31/17, Amount: \$140,000

## Professional Service

### Editorial Board

[Journal of Nonlinear Science](#), 2018-present

[Journal of Geometric Mechanics](#), 2011-present

[European Journal of Control](#), 2006-2009

[Systems and Control Letters](#), 2009-2012  
[IEEE Transactions on Automatic Control](#), 2010-2012  
[SIAM Journal on Control and Optimization](#), 2011-2016  
[IEEE Control Systems Magazine](#), 2012-2016  
[IEEE Transactions on Network Science and Engineering](#), 2014-2017  
[IEEE Access](#), 2015-2017

#### Guest Editor

[IEEE Robotics and Automation Magazine](#) Special Issue on “Computational Geometry in Path Planning,” volume 15, issue 2, Jun 2008  
[SIAM Journal on Control and Optimization](#) Special Issue on “Control and Optimization in Cooperative Networks,” volume 48, number 1, Jan 2009  
[IEEE Control Systems Magazine](#) Special Issue on “Distributed Control and Estimation of Robotic Vehicle Networks,” volume 36, number 2, April 2016 and number 4, August 2016

#### Section Editor

[Encyclopedia of Systems and Control](#), Section on “Control of Networked Systems”, J. Baillieul and T. Samad, editors-in-chief, Springer Verlag, New York, 2014

#### Conference Editorial Board

Associate Editor, Conference Editorial Board, IEEE Control Systems Society, 2005-2009  
Associate Editor, Conference Editorial Board, IEEE Robotics and Automation Society, 2010-2012

#### Membership in Professional Societies

Fellow IEEE (Control Systems Society), 2014 (member '02, senior member '06)  
Member SIAM (Activity Group on Control and Systems Theory), 2003-present  
Member Spanish Society of Applied Mathematics, 2004-present  
Member AMS, 2005-2012  
Member Royal Spanish Mathematical Society, 2000-2007

#### Elected or Appointed Positions in Professional Societies

Chair, IEEE Control Systems Society Technical Committee on Manufacturing Automation and Robotic Control, Jan 2009-Dec 2012  
Secretary, SIAM Activity Group on Control and Systems Theory, 2012-2013 term  
Member, Board of Governors, IEEE Control Systems Society, 2018-2020 term

#### Conference and Workshop Organization

Organizer, Southern California Control Workshop, [16th edition](#) (University of California, San Diego, Nov 7, 2008), [23rd edition](#) (University of California, San Diego, Nov 30, 2012), [30th edition](#) (University of California, San Diego, Jun 3, 2016)  
Workshop Chair, [CDC 2010](#), IEEE Conference on Decision and Control, Atlanta, Georgia, Dec 15-17, 2010  
Organizing Committee, [SIAM CT11](#), SIAM Conference on Control and Its Applications, Baltimore, Maryland, Jul 25-27, 2011  
Program Co-Chair, [NecSys2012](#), 3rd IFAC Workshop on Distributed Estimation and Control in Networked Systems, Santa Barbara, California, Sep 14-15, 2012  
Special Sessions Chair, [ACC 2015](#), American Control Conference, Chicago, Illinois, Jul 1-3, 2015  
Organizing Committee, [SCR 2016](#), Southern California Robotics Symposium, UC San Diego, Apr 22, 2016  
National Organizing Committee, [NOLCOS 2016](#), IFAC Symposium on Nonlinear Control Systems, Monterey, California, Aug 23-25, 2016  
Program Vice-Chair, [CDC16](#), IEEE Conference on Decision and Control, Las Vegas, Nevada, Dec 12-16, 2016

#### Program and Scientific Committees

ADHS – *Analysis and Design of Hybrid Systems*: [ADHS 2015](#) (Oct 14 - Oct 16, 2015, Atlanta, Georgia)

ACC – *American Control Conference*: [ACC 2010](#) (Jun 30 - Jul 2, 2010, Baltimore, Maryland), [ACC 2018](#) (Jun 27 - Jun 29, 2018, Milwaukee, Wisconsin)

CCTA – *IEEE Conference on Control Technology and Applications*: [CCTA 2017](#) (Aug 27-30, 2017, Hawaii, Hawaii), [CCTA 2018](#) (Aug 21-24, 2018, Copenhagen, Denmark)

CDC – *IEEE Conference on Decision and Control*: [CDC 2009](#) (Dec 16-18, 2009, Shanghai, China), [CDC 2014](#) (Dec 15-17, 2014, Los Angeles, California)

DARS – *International Symposium on Distributed Autonomous Robotic Systems*: [DARS 2010](#) (Nov 1-3, 2010, Lausanne, Switzerland), [DARS 2016](#) (Nov 7-9, 2016, London, United Kingdom)

DELEONFEST – *a Workshop to Celebrate the 60th Birthday of Manuel de Leon and his Research Contributions*, [DELEONFEST](#) (Dec 16-19, 2013, Madrid, Spain)

EBCCSP – *IEEE International Conference on Event-Based Control, Communication, and Signal Processing*: [EBCCSP 2015](#) (Jun 17-19, 2015, Krakow, Poland)

ECC – *European Control Conference*: [ECC 2013](#) (Jul 17-19, 2013, Zürich, Switzerland)

GTMCR – *Workshop on Geometric and Topological Methods in Control and Robotics*: [GTMCR2010](#) (Oct 4-6, 2010, La Cristalera, Madrid, Spain)

ICC – *Indian Control Conference*: [ICC 2016](#) (Jan 4 - Jan 6, 2016, Hyderabad, India)

MED – *Mediterranean Conference on Control and Automation*: [MED 2011](#) (Jun 20-23, 2011, Corfu, Greece), [MED 2012](#) (Jul 3-6, 2012, Barcelona, Spain), [MED 2013](#) (Jun 25-28, 2013, Crete, Greece), [MED 2015](#) (Jun 16-19, 2015, Torremolinos, Spain)

MSC – *IEEE Multi-Conference on Systems and Control*: [MSC 2016](#) (Sep 19 - Sep 22, 2016, Buenos Aires, Argentina)

MTNS – *International Symposium on Mathematical Theory of Networks and Systems*: [MTNS 2014](#) (Jul 7-11, 2014, Groningen, the Netherlands), [MTNS 2016](#) (Jul 11-15, 2016, Minneapolis, Minnesota, USA)

NECSYS – *IFAC Workshop on Distributed Estimation and Control in Networked Systems*: [NecSys2009](#) (Sep 24-26 2009, Venice, Italy), [NecSys2010](#) (Sep 13-14, 2010, Annecy, France), [NecSys2013](#) (Sep 25-26, 2013, Koblenz, Germany), [NecSys2018](#) (Aug 27-28, 2018, Groningen, the Netherlands)

ROBOCOMM – *International Conference on Networked Robots*: [ROBOCOMM 07](#) (Sep 10-12, 2007, Athens, Greece), [ROBOCOMM 09](#) (Mar 31- Apr 2, 2008, Odense, Denmark)

RSS – *Robotics: Science and Systems*: [RSS08](#) (Jun 25-28, 2008, Zurich, Switzerland), [RSS17](#) (Jul 12-16, 2017, Boston, Massachusetts), [RSS18](#) (Jun 26-30, 2018, Pittsburgh, Pennsylvania)

SAC-IRMAS – *ACM Symposium On Applied Computing: Intelligent Robotics and Multi-Agent Systems technical track* [SAC18-IRMAS](#) (Apr 9-13, 2018, Pau, France)

WAFR – *Workshop on the Algorithmic Foundations of Robotics*: [WAFR 2012](#) (Jun 13-15, 2012, Cambridge, Massachusetts, USA)

Reviewer, ACM Transactions on Sensor Networks; Automatica; ASME Journal of Dynamic Systems, Measurement, and Control; Cyber-Physical Systems; Discrete and Continuous Dynamical Systems; Discrete Event Dynamic Systems: Theory and Applications; European Journal of Control; IEEE Transactions on Automatic Control; IEEE Transactions on Automation Science and Engineering; IEEE Transactions on Control Systems Technology; IEEE Transactions on Robotics; IEEE Transactions on Signal Processing; IET Control Theory and Applications; International Journal of Control; International Journal of Robotics Research; International Journal of Robust and Nonlinear Control; Journal of Geometric Mechanics; Journal of Geometry and Physics; Journal of Nonlinear Science; Journal of Physics A: Mathematical and General; Journal of the Royal Academy of Sciences of Madrid, Series A, Mathematics; Mathematics of Control, Signals, and Systems; Methods and Applications of Analysis; Neural Computing and Applications; Physics Letters A; Proceedings of the IEEE; Reports on Mathematical Physics; SIAM Journal on Applied Dynamical Systems; SIAM Journal on Control and Optimization; Symmetry, Integrability and Geometry: Methods and Applications

Reviewer, Springer-Verlag; Prentice Hall; John Wiley&Sons; World Scientific Publishing

Reviewer, American Control Conference, IEEE Conference on Decision and Control, IEEE Conference on Robotics and Automation, IEEE Multi-Conference on Systems and Control, IEEE/RSJ International Conference on Intelligent Robots and Systems, IFAC World Congress, IFAC Symposium on Nonlinear Control Systems, Hybrid Systems: Computation and Control, IEEE Conference on Automation Science and Engineering, IFAC Symposium on System Identification, Robotics: Science and Systems, International Workshop in Global Analysis

Reviewer, U.S. Civilian Research and Development Foundation (CRDF), Cooperative Grants Program, 2003  
Reviewer, Spanish Ministry of Science and Technology grant proposals (2004, 2005)  
Reviewer, Israel Science Foundation, 2007  
Reviewer and panelist, National Science Foundation (Civil, Mechanical and Manufacturing Innovation, 2008, 2009, 2011 (2), 2012, 2014, 2017; Cyber-Physical Systems, 2009; Applied Mathematics, 2010, 2016; Robotics Initiative, 2015)  
Reviewer, Air Force Office of Scientific Research (Dynamics and Control Program, 2009, 2010, 2012-2014, 2016)  
Reviewer, Army Research Office (Network Sciences Program, 2017)  
Reviewer, Natural Sciences and Engineering Research Council of Canada, 2011  
Reviewer, General Secretariat of Research and Technology, Greek Ministry of Education, 2013  
Reviewer, European Research Council, Consolidator Grants, European Commission, 2016

#### Software Development

Mathematica packages PlanGeom.m and SpatialGeom.m, planar and spatial geometry computation

#### University Service

MAE Vice Chair, 2014-2016  
MAE Graduate Affairs Committee, member, 2008-2009, 2010-2011, 2013-2014  
MAE Undergraduate Affairs Committee, member, 2009-2010, 2012-2013, chair 2014-2016  
MAE ABET Committee, member, 2011-2012  
MAE Robotics Search Committee, member, 2014-2015  
SOE Committee on Joint UCSD/SDSU Doctoral Degree Program, MAE faculty representative, 2010-2014  
SOE Strategic Planning, Graduate Program Workgroup, member, Winter 2013  
Sixth College Commencement, MAE faculty representative, 2011  
Sixth College Provost Search Committee, member, 2011-2012  
Academic Senate's Committee on Campus and Community Environment, member, 2011-2014  
Chancellor's Campus and Community Planning Committee, member, 2011-2014  
Sixth College Provost Review Committee, member, 2017  
UCSC AMS Search Committee, 2005-2006 (Applied Math), 2006-2007 (Statistics)  
UCSC AMS Departmental Webmaster, 2004-2007

#### Postdoctoral Research Associates

Chin-Yao Zhang (2016-, co-advised with Prof. Sonia Martínez)  
Bahman Gharesifard (2009-2012). Now Assistant Professor at Department of Mathematics and Statistics, Queen's University, Canada  
Solmaz S. Kia (2012-2014, co-advised with Prof. Sonia Martínez). Now Assistant Professor at Department of Mechanical and Aerospace Engineering, University of California, Irvine  
Michael Ouimet (2014-2015, co-advised with Prof. Sonia Martínez). Now Engineer at Unmanned Maritime Vehicles Laboratory, SPAWAR Systems Center Pacific, San Diego  
Yingbo Zhao (2015-2016). Now Senior Algorithms Engineer at Cymer Corporation  
Pavan Tallapragada (2014-2017). Now Assistant Professor at Department of Electrical Engineering, Indian Institute of Science  
Kooktae Lee (2016-2017). Now Assistant Professor at Department of Mechanical Engineering, New Mexico Institute of Mining and Technology

#### Graduate Students

Yifu Zhang (UCSD MAE, Ph.D. student, 2014-)  
Erfan Nozari (UCSD MAE, Ph.D. student, 2014-)  
Aaron Ma (UCSD MAE, Ph.D. student, 2016-)  
Pio Ong (UCSD MAE, Ph.D. student, 2016-)

Priyank Srivastava (UCSD MAE, Ph.D. student, 2016-)  
 Masih Haseli (UCSD MAE, Ph.D. student, 2017-)  
 Anurag Ganguli (UIUC EE, Ph.D. 2007, co-advised with Francesco Bullo, UCSB). Now Senior Engineer at PlusAI  
 Michael Schuresko (UCSC CS, M.Sc. 2008 and UCSC AMS, Ph.D. 2009). Now at Senior Engineer at Oblong Industries Inc  
 Rishi Graham (UCSC AMS, Ph.D. 2010). Now at Monterey Bay Aquarium Research Institute  
 Cameron Nowzari (UCSD MAE, Ph.D. 2013), 2013 Outstanding Graduate Student Award in MAE. Now Assistant Professor at the Electrical and Computer Engineering Department, George Mason University  
 Michael Ouimet (UCSD MAE, Ph.D. 2014). Now Research Scientist at Unmanned Maritime Vehicles Laboratory, SPAWAR Systems Center Pacific, San Diego  
 Dean Richert (UCSD MAE, Ph.D. 2014), 2014 Outstanding Graduate Student Award in MAE and inaugural recipient of “Robert E. Skelton Systems and Control Dissertation Award” (academic year 2013-2014). Now postdoc at University of Calgary  
 David Mateos-Núñez (UCSD MAE, Ph.D. 2015). Now postdoc at Fraunhofer FHR  
 Ashish Cherukuri (UCSD MAE, Ph.D. 2017). 2016 Outstanding Graduate Student Award in MAE, 2016 MAE Distinguished Fellowship Award, and recipient of “Robert E. Skelton Systems and Control Dissertation Award” (academic year 2016-2017). Now postdoc at ETH Zürich  
 Simon Niederlaender (University of Stuttgart, Germany, M.S. 2015). Now Ph.D. student at University of Stuttgart  
 Aaron Ma (UCSD MAE, M.S. 2016). Now Ph.D. student at UC San Diego  
 Rosario Aragües (Universidad de Zaragoza, Spain, visiting Ph.D. student, Spring 08, 09)  
 Edgardo Chunga (Pontificia Universidad Católica del Perú, Perú, visiting Ph.D. student, Spring 09)  
 Rokus Ottervanger (University of Technology Eindhoven, the Netherlands, visiting M.S. student, Spring 14)  
 Tjerk Stegink (University of Groningen, the Netherlands, visiting Ph.D. student, Spring 17)  
 Ernesto Aranda (Universidad Nacional de Educación a Distancia, Spain, visiting Ph.D. student, Spring 17)

### **Undergraduate Students**

Katie Laventall (UCSC Math, senior undergraduate thesis, 2006-2007)  
 Ethan Allen (Summer Training Academy for Research in the Sciences Program, Summer 2012)  
 Adam J Durbin (Regents Scholar Initiative Program, Fall 2012)  
 Jinyeong Yim (visiting student from Yonsei University, South Korea, Spring 2013)  
 Katherine Liu (Independent Study for Undergraduates, Winter, Spring, 2014; Undergraduate Researcher Fall 2014- Spring 2015)  
 Daniel Heideman (Independent Study for Undergraduates, Winter 2014-Spring 2014, Fall 2014-Winter 2015)  
 Peizhen Gu (UCSD-Zhejiang University Summer Research Program, Summer 2014)  
 Matthew Qen (Independent Study for Undergraduates, Fall 2014-Spring 2015)  
 Mike Liu (Independent Study for Undergraduates, Spring 2015-Spring 2016)  
 Gerardo Gonzalez (CAMP Summer Research Program, Summer 2015, Independent Study for Undergraduates, Fall 2015-Spring 2016, UCSD Undergraduate Research Scholarship, Summer 2016)  
 Jose Ramirez (Independent Study for Undergraduates, Summer 2015- Winter 2016)  
 Julio Martinez (Independent Study for Undergraduates, Fall 2015-Spring 2016)  
 Bruno Maciel (Brazil Scientific Mobility Program, Summer 2015)  
 Zhiye Zhang (Fall 2015)  
 Shiyuan Huang (Winter 2015-Summer 2016)  
 Aamir Rasheed (Spring 2016)  
 Andrew Chen (Summer 2016-Fall 2017)  
 Ashim Neupane (Summer Training Academy for Research in the Sciences Program, Summer 2016 and Summer 2017)  
 Bryan Yang (Summer Training Academy for Research in the Sciences Program, Summer 2016)



Alexander Khoury (Independent Study for Undergraduates, Fall 2016-Spring 2017, Fall 2017)  
Mingze An (Winter 2016-Spring 2017, Fall 2017)  
Alec Chac (Summer 2017-Fall 2017)  
Ramon Duran (ENLACE Summer Research Program, Summer 2017)  
Tomas Torres (ENLACE Summer Research Program, Summer 2017)  
Agustin Manriquez (Regents Scholar Initiative Program, Fall 2017)

## Teaching Activities

### Undergraduate Courses

- MAE140:** Linear circuits (UCSD, Winter 09, Fall 09, 11, 13-14, Winter 16). Steady-state and dynamic behavior of linear circuits, Kirchoff's laws, and design applications in engineering (4 credits)
- MAE143a:** Signals and Systems (UCSD, Winter 11). Dynamical modeling, Laplace, Fourier and z-transforms, transfer functions, frequency response, and sampling and discrete signals (4 credits)
- AMS27/L:** Mathematical Methods for Engineers (UCSC, Winter 05, Fall 05-06). Linear algebra, differential equations and Laplace transform (5+2 credits)
- MATH11B:** Calculus with Applications (UCSC, Spring 06). Integrals of functions, polynomial approximations, and Taylor series (5 credits)

### Graduate Courses

- MAE207:** Game Theory for Engineers (UCSD, Spring 15). Fundamentals of game theory on modeling, analysis, and algorithms, strategic interactions and adversarial scenarios, with examples from economics, communication theory, and social networks. (4 credits). Developed ab initio.
- MAE247:** Cooperative Control of Multi-Agent Systems (UCSD, Spring 13). Cooperative control strategies for multi-agent systems, evolution models, proximity graphs, invariance principles, and coordination algorithms for rendezvous, deployment, flocking, formation, and consensus (4 credits)
- MAE281A:** Nonlinear Systems (UCSD, Spring 13). Nonlinear systems, Lyapunov stability, LaSalle's invariance theorem, perturbed systems with vanishing and nonvanishing perturbations, input-to-state stability, and averaging (4 credits)
- MAE281B:** Nonlinear Control (UCSD, Spring 08-12, Spring 14-16). Nonlinear control systems dealing with feedback stabilization and linearization, input-output stability, and passivity (4 credits)
- MAE286:** Hybrid Systems (UCSD, Fall 08, 10, Winter 14). Modeling, analysis, and design of hybrid dynamical systems, with emphasis on stability and applications (4 credits). Developed ab initio.
- MAE289A:** Mathematical Analysis for Applications (UCSD, Fall 15). Topics of mathematical analysis for real/vector-valued functions of one and/or several variables. (4 credits).
- AMS214:** Applied Dynamical Systems (UCSC, Spring 07). Dynamical systems and qualitative differential equations, stability, and applications (5 credits). Developed ab initio.
- AMS231:** Introduction to Nonlinear Control (UCSC, Spring 05, Winter 06). Nonlinear systems and control (5 credits). Developed ab initio.
- AMS236:** Motion Coordination of Robotic Networks (UCSC, Fall 06). Cooperative control, distributed algorithms and robotic networks (5 credits). Developed ab initio.

### High School Courses

- COSMOS:** Robot Automation: Intelligence through Feedback Control (UCSC, Summer 05, Summer 06). Course on feedback control and robotics in the California State School for Mathematics and Science (COSMOS) program for high school students. Developed ab initio.

### Courses at Summer/Winter Schools



Invited Advanced Topics Speaker, Summer School on Modeling and Control of Mechanical Systems, Dutch Institute for Systems and Control (DISC), Netherlands, Jul 2002

Invited Lecturer, Summer School on Geometric Mechanics and Control, International Center of Mathematical Meetings, Spain, Jun 2007

Invited Lecturer, Cooperative multi-agent systems: distributed computation, estimation and control, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy, Dec 2007

Invited Speaker, Winter School on Olfactory Localization, UCSD Institute of Nonlinear Science, Jan 2009

Invited Speaker, Georgia Tech Summer School on Cyber-Physical Systems, Atlanta, Georgia, Jun 2010

Invited Speaker, JAE Summer School on Mathematics, Madrid, Spain, Jul 2010

Invited Speaker, Summer School on a Systems and Control Perspective in Human-Robot-Environment Interaction, Dutch Institute for Systems and Control (DISC), Netherlands, Jun 2016

## Publications

Manuscripts listed in inverse chronological order, all available at <http://carmenere.ucsd.edu/jorge>.

### Journal Papers

- (J-110) C.-Y. Chang, J. Cortés, and S. Martínez. Virtual-voltage partition-based approach to mixed-integer optimal power flow problems. *IEEE Transactions on Power Systems*, 2018. Submitted
- (J-109) T. Stegink, A. Cherukuri, C. De Persis, A. J. van der Schaft, and J. Cortés. Frequency-driven market mechanisms for optimal dispatch in power networks. *IEEE Transactions on Automatic Control*, 2018. Submitted
- (J-108) Y. Zhang and J. Cortés. Characterizing tolerable disturbances for transient stability of power networks. *IEEE Transactions on Network Science and Engineering*, 2017. Submitted
- (J-107) A. Cherukuri and J. Cortés. Cooperative data-driven distributionally robust optimization. *IEEE Transactions on Automatic Control*, 2017. Submitted
- (J-106) Y. Wu, S. E. Li, J. Cortés, and K. Poolla. Distributed sliding mode control for nonlinear heterogeneous platoon systems with positive definite topologies. *IEEE Transactions on Control Systems Technology*, 2017. Submitted
- (J-105) C. Nowzari, E. Garcia, and J. Cortés. Event-triggered control and communication of network systems for multi-agent consensus. *Automatica*, 2017. Submitted
- (J-104) C.-Y. Chang, J. Cortés, and S. Martínez. Scheduled-asynchronous distributed algorithm for optimal power flow. *IEEE Transactions on Control of Network Systems*, 2017. Submitted
- (J-103) J. Cortés and M. Egerstedt. Coordinated control of multi-robot systems: A survey. *SICE Journal of Control, Measurement, and System Integration*, 10(6):495–503, 2017
- (J-102) P. J. S. Franks, M. Ouimet, J. Cortés, J. Garwood, and A. J. Lucas. Stokes drift of plankton in linear internal waves: Cross-shore transport of neutrally buoyant and depth-keeping organisms. *Marine Ecology Progress Series*, 2017. Submitted
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