

George J. Pappas

UPS Foundation Professor of Electrical and Systems Engineering

Associate Dean for Research and Innovation

School of Engineering and Applied Science, University of Pennsylvania

Philadelphia, PA 19104, USA

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www.georgejpappas.org

RESEARCH INTERESTS

Control systems, robotics, formal methods, and machine learning, with emphasis on the safety, security, and trustworthiness of AI-enabled autonomous and cyber-physical systems.

APPOINTMENTS

LEADERSHIP APPOINTMENTS, UNIVERSITY OF PENNSYLVANIA

Associate Dean for Research and Innovation

July 2024 – present

School of Engineering and Applied Science

Director, Raj and Neera Singh B.S.E. Program in Artificial Intelligence

February 2024 – present

School of Engineering and Applied Science

Chair, Department of Electrical and Systems Engineering

July 2012 – February 2024

School of Engineering and Applied Science

Deputy Dean for Research

January 2008 – June 2012

School of Engineering and Applied Science

Director, GRASP Laboratory

August 2005 – January 2008

General Robotics, Automation, Sensing and Perception Laboratory

Graduate Group Chair

July 2001 – August 2005

Department of Electrical Engineering

FACULTY APPOINTMENTS, UNIVERSITY OF PENNSYLVANIA

Primary appointment in Electrical and Systems Engineering; secondary appointments in Computer and Information Science and in Mechanical Engineering and Applied Mechanics.

UPS Foundation Professor

July 2018 – present

Joseph Moore Professor

May 2008 – June 2018

Professor

July 2007 – present

Associate Professor

July 2004 – July 2007

Assistant Professor

March 2000 – July 2004

EDUCATION

University of California at Berkeley

December 1998

Ph.D., Electrical Engineering and Computer Sciences
 Thesis: *Hybrid Systems: Computation and Abstraction*
 Advisor: Prof. Shankar Sastry

Harvard University

January 1994 – August 1994

Graduate Fellow, Division of Applied Sciences

Rensselaer Polytechnic Institute

December 1992

M.S., Computer & Systems Engineering
 Thesis: *Modeling, Stabilization and Tracking Control of Nonholonomic Vehicles*
 Advisor: Prof. Kostas Kyriakopoulos

Rensselaer Polytechnic Institute

December 1991

B.S., *Magna Cum Laude*, Computer & Systems Engineering

HONORS & AWARDS

MAJOR HONORS

- 2026 IEEE Leon K. Kirchmayer Graduate Teaching Award
- 2026 American Association for the Advancement of Science (AAAS) Fellow
- 2025 ECEDHA ECE Technology Integration Award
- 2024 Member, U.S. National Academy of Engineering
- 2021 UC Berkeley EECS EE Distinguished Alumni Award
- 2020 International Federation of Automatic Control (IFAC) Fellow
- 2017 University of Pennsylvania Provost's Award for Distinguished Ph.D. Teaching and Mentoring
- 2015 Penn Engineering George H. Heilmeier Faculty Award for Excellence in Research
- 2010 IEEE CSS Antonio Ruberti Young Researcher Prize
- 2009 IEEE Fellow
- 2007 N.A.E.-A. von Humboldt German-American Frontiers of Engineering Program
- 2004 NSF Presidential Early Career Award for Scientists and Engineers (PECASE)
- 2002 National Science Foundation CAREER Award
- 1999 UC Berkeley EECS Eli Jury Award for Excellence in Systems Research

PAPER AWARDS

- 2026 IEEE CSS Control Systems Magazine Outstanding Paper Award
- 2025 International Conference on Runtime Verification (RV) Test of Time Award
- 2024 IEEE CSS George S. Axelby Outstanding Paper Award
- 2023 IEEE RAS ICRA Outstanding Multi-Robot Systems Paper
- 2022 ACM Transactions on Embedded Computing Systems Best Paper Award
- 2020 IEEE SPS ICASSP Best Paper Award, Barcelona, Spain
- 2019 Finalist, ACM/IEEE ICCPS Best Paper Award, Montreal, Canada
- 2018 IEEE CSS Control Systems Magazine Outstanding Paper Award
- 2017 IEEE RAS ICRA Best Conference Paper Award, Singapore
- 2017 Finalist, IEEE RAS ICRA Best Robotic Vision Paper Award, Singapore
- 2017 IEEE/ACM IoTDI Best Poster Award, Pittsburgh, PA
- 2016 AACC O. Hugo Schuck Best Paper Award (theory)

- 2015 Finalist, ACM/IEEE ICCPS Best Paper Award, Seattle, WA
- 2014 AACC O. Hugo Schuck Best Paper Award (theory)
- 2014 ACM/IEEE ICCPS Best Paper Award, Berlin, Germany
- 2014 Finalist, ACM/IEEE ICCPS Best Paper Award, Berlin, Germany
- 2012 ACM/IEEE IPSN Best Presentation Award, Beijing, China
- 2011 Finalist, IEEE RAS ICRA Best Manipulation Paper Award, Shanghai, China
- 2009 IEEE CSS George S. Axelby Outstanding Paper Award
- 2007 Finalist, IEEE/RSJ IROS Best Paper Award, San Diego, CA
- 1998 Finalist, IEEE CSS CDC Best Student Paper Award, Tampa, FL

STUDENT AWARDS

- 2025 Penn ESE Joseph and Rosaline Wolf Best Dissertation Award (A. Robey; as co-advisor)
- 2025 Penn ESE Joseph and Rosaline Wolf Best Dissertation Award (M. Tzes; as advisor)
- 2024 AACC American Control Conference Best Student Paper Award (C. Stamouli; as advisor)
- 2022 Penn Hallac and Wolf Award for Outstanding Doctoral Research (A. Rodionova; as advisor)
- 2021 IEEE CSS CDC Best Student Paper Award (A. Rodionova; as advisor)
- 2021 Penn Hallac and Wolf Award for Outstanding Doctoral Research (A. Alexandru; as co-advisor)
- 2020 Penn Hallac and Wolf Award for Outstanding Doctoral Research (H. Jeong; as co-advisor)
- 2019 Finalist, AACC American Control Conference Best Student Paper Award (as advisor)
- 2017 Finalist, IEEE CSS CDC Best Student Paper Award, Melbourne, Australia (as advisor)
- 2017 Finalist, IFAC World Congress Young Author Prize, Toulouse, France (as advisor)
- 2016 Penn Hallac and Wolf Award for Outstanding Doctoral Research (F. Miao; as advisor)
- 2016 Penn ESE Joseph and Rosaline Wolf Best Dissertation Award (K. Gatsis; as advisor)
- 2015 Penn ESE Joseph and Rosaline Wolf Best Dissertation Award (N. Atanasov; as co-advisor)
- 2013 AACC American Control Conference Best Student Paper Award, Washington, DC (as advisor)
- 2008 Penn Hallac and Wolf Award for Outstanding Doctoral Research (H. Kress-Gazit; as advisor)
- 2007 Finalist, IEEE RAS ICRA Best Student Paper Award, Rome, Italy (as advisor)
- 2006 Finalist, IEEE CSS CDC Best Student Paper Award, San Diego, CA (as advisor)
- 2004 Finalist, IEEE CSS CDC Best Student Paper Award, The Bahamas (as co-advisor)
- 2004 Finalist, AACC American Control Conference Best Student Paper Award, Boston, MA (as advisor)
- 2001 Finalist, IEEE CSS CDC Best Student Paper Award, Orlando, FL (as advisor)
- 2001 Finalist, AACC American Control Conference Best Student Paper Award, Arlington, VA (as advisor)

RESEARCH GROUP

CURRENT MEMBERS

1. Sribalaji C. Anand, Swedish Research Council International Postdoc, ESE, October 2025–present
2. Tesshu Fujinami, Ph.D. graduate student, ESE, September 2023–present
3. Kyle Horton, Ph.D. graduate student, ESE, September 2025–present
4. Yash Jain, Ph.D. graduate student, CIS, September 2026–present
5. Pavlos Kallinikidis, Ph.D. graduate student, ESE, September 2021–present
6. Shayan Kiyani, Ph.D. graduate student, ESE, September 2022–present
7. Sunggun Lee, Ph.D. graduate student, ESE, September 2025–present
8. Sima Noorani, Ph.D. graduate student, ESE, September 2022–present
9. Zac Ravichandran, Ph.D. graduate student, ESE, September 2023–present
10. Nicholas Rober, Postdoctoral Researcher, ESE, September 2026–present
11. Mahdi Sabbaghi, Ph.D. graduate student, ESE, September 2022–present
12. Pascal Sikorski, Ph.D. graduate student, ESE, September 2026–present
13. David Snyder, Postdoctoral Researcher, ESE, September 2025–present
14. Anne Somalwar, Ph.D. graduate student, AMCS, September 2023–present
15. Victoria Tuck, Postdoctoral Researcher, ESE, October 2025–present
16. Hangtao Zhang, Ph.D. graduate student, CIS, September 2026–present

FORMER PH.D. STUDENTS AND POSTDOCS

1. Ali Ahmadzadeh, Ph.D. graduate student, ESE, September 2003–August 2008
Now Quantitative Strategist, Citadel Energy Marketing, CT
2. Andreea Alexandru, Ph.D. graduate student, ESE, September 2015–May 2021
Now Senior Scientist, Duality Technologies
3. Victor Amelkin, Postdoctoral Researcher, ESE, July 2018–June 2020
Now Research Scientist, Amazon Robotics
4. Nikolay Atanasov, Ph.D. graduate student, ESE, September 2009–August 2015
Now Associate Professor, ECE Department, University of California, San Diego, CA
5. Shun-ichi Azuma, Visiting Postdoctoral Scholar, ESE, April 2009–April 2010
Now Professor, Kyoto University, Kyoto, Japan
6. Mohamed Babaali, Postdoctoral Researcher, ESE, July 2004–May 2005
Now Principal Software Engineer at Mathworks, Boston, MA
7. Thomas Beckers, Postdoctoral Researcher, ESE, January 2021–December 2022
Now Professor of Autonomous Systems, Ulm University, Germany
8. Nikolaos Bousias, Ph.D. graduate student, ESE, September 2019–July 2026
Now at Ghost Robotics, Philadelphia, PA
9. Sean Bowman, Ph.D. graduate student, CIS, September 2012–December 2021
Now Lead Robotics Software Engineer, Exyn Technologies, Philadelphia, PA
10. Kong Yao Chee, Ph.D. graduate student, ESE, September 2019–December 2024
Now Senior Member of Technical Staff, DSO National Laboratories, Singapore
11. Austin Chen, Ph.D. graduate student, CIS, September 2018–May 2025
Now Mission Autonomy Lead at HavocAI, San Diego, CA
12. Matthew Cleaveland, Ph.D. graduate student, ESE, September 2018–May 2025
Now Technical Staff, MIT Lincoln Laboratory, Cambridge, MA
13. Nicolo Dal Fabbro, Postdoctoral Researcher, ESE, November 2023–July 2026
Now at NASDAQ Inc
14. Philip Dames, Postdoctoral Researcher, ESE, September 2015–June 2016

- Now Associate Professor, Mechanical Engineering, Temple University, Philadelphia, PA
15. Thao Dang, Postdoctoral Researcher, CIS, January 2001–December 2001
Now Directeur de Recherche at VERIMAG, CNRS, Grenoble, France
 16. Alessandro D’Innocenzo, Postdoctoral Researcher, ESE, March 2008–December 2008
Now Associate Professor, Università di L’Aquila, Italy
 17. Chinwendu Enyioha, Ph.D. graduate student, ESE, September 2008–December 2014
Now Associate Professor, ECE Department, University of Central Florida, Orlando, FL
 18. Georgios Fainekos, Ph.D. graduate student, CIS, September 2002–August 2008
Now Senior Principal Scientist, Toyota Motor North America R&D
 19. Mahyar Fazlyab, Postdoctoral Researcher, ESE, August 2018–August 2020
Now Assistant Professor, ECE Department, Johns Hopkins University, MD
 20. Konstantinos Gatsis, Ph.D. graduate student, ESE, September 2010–October 2019
Now Lecturer (Assistant Professor), Engineering Sciences, University of Oxford, Oxford, UK
 21. Antoine Girard, Postdoctoral Researcher, ESE, October 2004–December 2005
Now CNRS Directeur de Recherche, Laboratoire des Signaux et Systèmes, CentraleSupélec, France
 22. Shuo Han, Postdoctoral Researcher, ESE, October 2013–July 2017
Now Associate Professor, ECE Department, University of Illinois Chicago, IL
 23. Radoslav Ivanov, Postdoctoral Researcher, CIS, August 2017–December 2021
Now Assistant Professor, CS Department, Rensselaer Polytechnic Institute, Troy, NY
 24. Heejin Chloe Jeong, Ph.D. graduate student, ESE, January 2016–May 2020
Now Staff Research Engineer, Waymo
 25. A. Agung Julius, Postdoctoral Researcher, ESE, June 2005–December 2008
Now Professor, ECSE Department, Rensselaer Polytechnic Institute, Troy, NY
 26. Dionysios Kalogieras, Postdoctoral Researcher, ESE, June 2019–August 2020
Now Assistant Professor, EE Department, Yale University, CT
 27. Ioannis Kantaros, Postdoctoral Researcher, CIS, August 2018–December 2021
Now Assistant Professor, ESE Department, Washington University in St. Louis, MO
 28. T. John Koo, Postdoctoral Researcher, EE, August 2000–January 2001
Now Director, Embedded Systems, Software, Systems, ASTRI, Hong Kong, China
 29. Fragkiskos Koufogiannis, Ph.D. graduate student, ESE, September 2011–July 2017
Now Principal Research Scientist at Raytheon Technologies Research Center
 30. Hadas Kress-Gazit, Ph.D. graduate student, ESE, September 2003–August 2008
Now Geoffrey S.M. Hedrick Sr. Professor, Mechanical and Aerospace Eng., Cornell University
 31. Jerome Le Ny, Postdoctoral Researcher, ESE, September 2008–April 2012
Now Professor, Electrical Engineering, École Polytechnique de Montréal, Canada
 32. Lars Lindemann, Postdoctoral Researcher, ESE, November 2020–December 2022
Now Assistant Professor, Automatic Control Laboratory, ETH Zurich, Switzerland
 33. Matthew Malencia, Ph.D. graduate student, ESE, September 2018–May 2023
Now Senior Technical Project Manager, Exyn Technologies, Philadelphia, PA
 34. Fei Miao, Ph.D. graduate student, ESE, September 2010–May 2016
Now Qiushi Distinguished Professor, Control Science and Engineering, Zhejiang University
 35. Aritra Mitra, Postdoctoral Researcher, ESE, August 2020–December 2022
Now Assistant Professor, ECE, North Carolina State University, NC
 36. Truong Nghiem, Ph.D. graduate student, ESE, September 2005–September 2012
Now Associate Professor, ECE Department, University of Central Florida, Orlando, FL
 37. Cameron Nowzari, Postdoctoral Researcher, ESE, October 2013–July 2016
Now Associate Professor, ECE Department, George Mason University, Fairfax, VA
 38. Erfan Nozari, Postdoctoral Researcher, ESE, August 2019–June 2020
Now Assistant Professor, ME Department, University of California, Riverside, CA
 39. Miroslav Pajic, Postdoctoral Researcher, ESE, September 2012–July 2015

- Now Professor, ECE Department, Duke University, NC
40. Sergio Pequito, Postdoctoral Researcher, ESE, August 2014–July 2017
Now Associate Professor, Instituto Superior Técnico, University of Lisbon, Portugal
 41. Alexander Robey, Ph.D. graduate student, ESE, September 2018–2024
Now Member of Technical Staff, Thinking Machines Lab
 42. Alena Rodionova, Ph.D. graduate student, ESE, September 2017–December 2022
Now Senior Software Engineer, Waabi, Boston, MA
 43. Orlando Romero, Ph.D. graduate student, ESE, September 2020–May 2025
Now Senior Specialist, Data Science, Nasdaq Inc
 44. Indranil Saha, Postdoctoral Researcher, CIS, July 2013–August 2015
Now Professor and Soma and Manas Mandal Chair, CSE Department, IIT Kanpur, India
 45. M. Selman Sakar, Ph.D. graduate student, ESE, September 2005–December 2010
Now Associate Professor at EPFL, Lausanne, Switzerland
 46. Rajiv Sambharya, Postdoctoral Researcher, ESE, September 2024–July 2026
Now Assistant Professor, Texas A&M University, College Station, TX
 47. Kelsey Saulnier, Ph.D. graduate student, ESE, September 2014–December 2022
Now Robotics Engineer, Pattern Labs
 48. Brent Schlotfeldt, Ph.D. graduate student, ESE, September 2016–May 2021
Now Staff Software Engineer, Waymo
 49. Jacob Seidman, Ph.D. graduate student, AMCS, September 2015–September 2022
Now Director of Applied AI, Reality Defender, New York, NY
 50. Yasser Shoukry, Postdoctoral Researcher, ESE, September 2015–July 2017
Now Associate Professor, ECE, University of California, Irvine, CA
 51. Igor Spasojevic, Postdoctoral Researcher, ESE, August 2022–June 2025
Now Assistant Professor, ECE Department, University of California, Riverside, CA
 52. Charis Stamouli, Ph.D. graduate student, ESE, September 2020–July 2026
Now Postdoctoral Researcher, ETH Zurich, Switzerland
 53. Shreyas Sundaram, Postdoctoral Researcher, ESE, September 2009–April 2010
Now Marie Gordon Professor, ECE, Purdue University, West Lafayette, IN
 54. Paulo Tabuada, Postdoctoral Researcher, ESE, January 2002–August 2003
Now Professor and Vijay K. Dhir Chair in Engineering, ECE Department, UCLA
 55. Herbert Tanner, Postdoctoral Researcher, ESE, June 2001–August 2003
Now Professor and Chair, Department of Mechanical Engineering, University of Delaware
 56. Pedro Paulo Ventura Tecchio, Ph.D. graduate student, ESE, September 2013–July 2019
Now at Brazilian Institute of Robotics, Salvador, Brazil
 57. Anastasios Tsiamis, Ph.D. graduate student, ESE, September 2015–March 2022
Now Assistant Professor, ECE Department, University of Patras, Greece
 58. Maria Elizabeth Tzes, Ph.D. graduate student, ESE, September 2018–May 2024
Now Applied Scientist II, Amazon Fulfillment Technologies and Robotics
 59. Vassilios Tzoumas, Ph.D. graduate student, ESE, September 2012–June 2018
Now Assistant Professor, Aerospace Department, University of Michigan, Ann Arbor, MI
 60. Nicholas Watkins, Ph.D. graduate student, ESE, September 2013–December 2018
Now Senior Professional Staff, Johns Hopkins University Applied Physics Laboratory
 61. Shuo Yang, Ph.D. graduate student, ESE, September 2022–December 2025
Now Quantitative Researcher, Point72
 62. Michael Zavlanos, Ph.D. graduate student, ESE, September 2003–August 2008
Now Professor, Mechanical Engineering and Materials Science, Duke University, NC
 63. Ingvar Ziemann, Postdoctoral Scholar, ESE, March 2023–June 2025
Now at Xantium (Tudor Investment Corporation), New York, NY

FORMER MASTERS STUDENTS

1. Haimin Hu, MSE Graduate Student, ESE, September 2018–May 2020
Now Assistant Professor, Computer Science, Johns Hopkins University, Baltimore, MD
2. Jingqi Li, MSE Graduate Student, ESE, September 2017–May 2019
Now Peter O'Donnell Jr. Postdoctoral Fellow, Oden Institute, UT Austin, TX
3. Saad Aleem, MSE Graduate Student, ESE, September 2014–May 2016
Now at Oracle, Redwood Shores, CA
4. Hakan Yazarel, MSE Graduate Student, ESE, September 2002–December 2005
Now Senior Principal Software Engineer at Carefusion, Orange County, CA
5. Selcuk Bayraktar, MSE Graduate Student, ESE, September 2002–September 2004
Now Chairman and CTO, Baykar, Istanbul, Turkey
6. Pradyumna K. Mishra, MSE Graduate Student, CIS, September 2000–December 2002
Now Co-Founder and CEO, Fingertips Lab, San Jose, CA

VISITING STUDENTS

1. Mahathi Anand, Ph.D. student, LMU Munich, Germany, March–April 2023
2. Nicolo Dal Fabbro, Ph.D. student, University of Padova, Italy, August 2022–April 2023
3. Lars Lindemann, Ph.D. student, KTH Royal Institute of Technology, Sweden, January–March 2020
4. Pushpak Jagtap, Ph.D. student, TU Munich, Germany, January–April 2019
5. Antonio Adaldo, Ph.D. student, KTH Royal Institute of Technology, Sweden, September–December 2017
6. Anna Lukina, Ph.D. student, TU Vienna, Austria, May–July 2017
7. Carmelo Di Franco, Ph.D. student, Scuola Superiore Sant'Anna, Italy, October 2015–March 2016
8. Francesco Smarra, Ph.D. student, University of L'Aquila, Italy, September 2014–March 2015
9. Riccardo Vignali, Ph.D. student, Politecnico di Milano, Italy, September–December 2014
10. Samuel Martin, Ph.D. student, Université Joseph Fourier, France, June–October 2011
11. Christoffer Sloth, Ph.D. student, Aalborg University, Denmark, February–August 2011
12. Alessandro D'Innocenzo, Ph.D. student, University of L'Aquila, Italy, multiple visits 2005–2007
13. Fabian Kratz, M.S.E. student, TU Eindhoven, The Netherlands, January–August 2005
14. Nicolo Giorgetti, Ph.D. student, University of Siena, Italy, September 2004–April 2005
15. Pieter Cuijpers, Ph.D. student, TU Eindhoven, The Netherlands, July–August 2003
16. Savvas Loizou, Ph.D. student, National Technical University of Athens, Greece, Fall 2002
17. Paulo Tabuada, Ph.D. student, Instituto Superior Técnico, Portugal, June 2000–December 2001

TEACHING

GRADUATE COURSES

ESE 5000 Linear Systems Theory	Fall 2001, 2002, 2005, 2017–2026
ESE 6800 Learning for Control (with M. Morari)	Spring 2018, 2019
ESE 6800 Optimal Control Theory	Fall 2011
ESE 6800 Networked and Embedded Control Systems (with J. Le Ny)	Spring 2011
CIS 8000 Green Buildings: Optimization and Adaptation (with B. Taskar)	Spring 2011
ESE 6170 Nonlinear Control Theory	Fall 2004, 2006, 2010
ESE 6010 Hybrid Systems (2000 jointly with R. Alur)	Fall 2000, Fall 2003, Spring 2009
ESE 6800 Special Topics in Systems Biology	Spring 2007
EECS 222 Nonlinear Systems: Analysis, Stability, Control (UC Berkeley)	Spring 1999

UNDERGRADUATE COURSES

ESE 1110 Introduction to Atoms, Bits, Circuits, and Systems (with S. Deliwala)	Fall 2018–2023
ESE 3010 Introduction to Probability	7 offerings, 2006–2012
ESE 3040 Introduction to Optimization	Spring 2005
ESE 3250 Introduction to Signals and Systems	Spring 2002, 2003, 2004
EE 325 Introduction to Analog and Digital Communications	Spring 2000, 2001

PUBLICATIONS

BOOKS AND EDITED VOLUMES

- B6. National Academies of Sciences, Engineering, and Medicine (G. J. Pappas, Committee Chair), *Machine Learning for Safety-Critical Applications: Opportunities, Challenges, and a Research Agenda*, The National Academies Press, Washington, DC, 2025. DOI: 10.17226/27970.
- B5. A. M. Annaswamy, K. H. Johansson and G. J. Pappas, editors, *Control for Societal-Scale Challenges: Roadmap 2030*, IEEE Control Systems Society, 2023.
- B4. A. Jadbabaie, J. Lygeros, G. J. Pappas, P. Parrilo, B. Recht, C. Tomlin and M. Zeilinger, editors, *Proceedings of the 3rd Conference on Learning for Dynamics and Control (L4DC)*, vol. 144 of *Proceedings of Machine Learning Research*, 2021.
- B3. National Academies of Sciences, Engineering, and Medicine (G. J. Pappas, Committee Member), *A 21st Century Cyber-Physical Systems Education*, The National Academies Press, Washington, DC, December 2016.
- B2. O. Khatib, V. Kumar and G. J. Pappas, editors, *Experimental Robotics: The Eleventh International Symposium*, vol. 54 of *Springer Tracts in Advanced Robotics*, Springer-Verlag, April 2009.
- B1. R. Alur and G. J. Pappas, editors, *Hybrid Systems: Computation and Control (HSCC 2004)*, vol. 2993 of *Lecture Notes in Computer Science*, Springer-Verlag, March 2004.

REFEREED JOURNAL PUBLICATIONS

- J166. Z. Xie, W. Zhang, Y. Ren, Z. Wang, G. J. Pappas and W. Jin, “Safe MPC Alignment with Human Directional Feedback,” *IEEE Transactions on Robotics*, vol. 42, pp. 750–769, 2026. DOI: 10.1109/TRO.2026.3651678.
- J165. A. Robey, Z. Ravichandran, E. K. Jones, J. Perlo, F. Barez, V. Kumar, J. Z. Kolter, H. Hassani and G. J. Pappas, “Beyond Alignment: Why Robotic Foundation Models Need Context-Aware Safety,” *Science Robotics*, vol. 11, no. 113, April 2026. DOI: 10.1126/scirobotics.aef2191.
- J164. D. S. Sundarsingh, Y. Li, T. Tang, G. J. Pappas, N. Atanasov and Y. Kantaros, “Safe Planning in Unknown Environments Using Conformalized Semantic Maps,” *IEEE Robotics and Automation Letters*, vol. 11, no. 4, pp. 4921–4928, April 2026. DOI: 10.1109/LRA.2026.3668466.
- J163. Z. Ravichandran, A. Robey, V. Kumar, G. J. Pappas and H. Hassani, “Safety Guardrails for LLM-Enabled Robots,” *IEEE Robotics and Automation Letters*, vol. 11, no. 4, pp. 4649–4656, April 2026. DOI: 10.1109/LRA.2026.3667488.
- J162. L. Lindemann, Y. Zhao, X. Yu, G. J. Pappas and J. V. Deshmukh, “Formal Verification and Control with Conformal Prediction: Practical Safety Guarantees for Autonomous Systems,” *IEEE Control Systems Magazine*, vol. 45, no. 6, pp. 72–122, December 2025. DOI: 10.1109/MCS.2025.3611545. **IEEE CSS Control Systems Magazine Outstanding Paper Award, 2026**
- J161. H. Cao, G. J. Pappas and N. Atanasov, “PKF: Probabilistic Data Association Kalman Filter for Multi-Object Tracking,” *IEEE Robotics and Automation Letters*, vol. 10, no. 11, pp. 11506–11513, November 2025. DOI: 10.1109/LRA.2025.3608646.
- J160. P. Akella, A. Dixit, M. Ahmadi, L. Lindemann, M. P. Chapman, G. J. Pappas, A. D. Ames and J. W. Burdick, “Risk-Aware Robotics: Tail Risk Measures in Planning, Control, and Verification [Focus on Education],” *IEEE Control Systems Magazine*, vol. 45, no. 4, pp. 46–78, August 2025. DOI: 10.1109/MCS.2025.3577050.

- J159. F. Cladera, Z. Ravichandran, J. Hughes, V. Murali, C. Nieto-Granda, M. A. Hsieh, G. J. Pappas, C. J. Taylor and V. Kumar, “Air-Ground Collaboration for Language-Specified Missions in Unknown Environments,” *IEEE Transactions on Field Robotics*, vol. 2, pp. 626–642, 2025. DOI: 10.1109/TFR.2025.3584019.
- J158. N. Dal Fabbro, A. Mitra, R. W. Heath, L. Schenato and G. J. Pappas, “Finite-Time Analysis of over-The-Air Federated TD Learning,” *IEEE Transactions on Wireless Communications*, 2025. DOI: 10.1109/TWC.2025.3555941.
- J157. C. Stamouli, L. F. Toso, A. Tsiamis, G. J. Pappas and J. Anderson, “Policy Gradient Bounds in Multitask LQR,” *IEEE Control Systems Letters*, vol. 9, pp. 2495–2500, 2025. DOI: 10.1109/LCSYS.2025.3625957.
- J156. A. Tsiamis, D. Kalogerias, A. Ribeiro and G. J. Pappas, “Linear Quadratic Control with Risk Constraints,” *Automatica*, vol. 174, article 112095, 2025. DOI: 10.1016/j.automatica.2024.112095.
- J155. A. Robey, E. Wong, H. Hassani and G. J. Pappas, “SmoothLLM: Defending Large Language Models Against Jailbreaking Attacks,” *Transactions on Machine Learning Research*, 2025.
- J154. Y. He, A. Robey, N. Murata, Y. Jiang, J. N. Williams, G. J. Pappas, H. Hassani, Y. Mitsufuji, R. Salakhutdinov and J. Z. Kolter, “Automated Black-Box Prompt Engineering for Personalized Text-To-Image Generation,” *Transactions on Machine Learning Research*, 2025.
- J153. H. Wang, A. Mitra, H. Hassani, G. J. Pappas and J. Anderson, “Federated TD Learning with Linear Function Approximation under Environmental Heterogeneity,” *Transactions on Machine Learning Research*, 2024.
- J152. A. M. Annaswamy, K. H. Johansson and G. J. Pappas, “Control for Societal-Scale Challenges: Road Map 2030,” *IEEE Control Systems Magazine*, vol. 44, no. 3, pp. 30–32, June 2024. DOI: 10.1109/MCS.2024.3382376.
- J151. A. Mitra, G. J. Pappas and H. Hassani, “Temporal Difference Learning with Compressed Updates: Error-Feedback Meets Reinforcement Learning,” *Transactions on Machine Learning Research*, 2024.
- J150. E. Nozari, M. Bertolero, E. Cornblath, A. Mahadevan, L. Caciagli, X. He, G. J. Pappas and D. S. Bassett, “Macroscopic Resting-State Brain Dynamics Are Best Described by Linear Models,” *Nature Biomedical Engineering*, vol. 8, pp. 68–84, 2024.
- J149. A. Tsiamis, I. Ziemann, N. Matni and G. J. Pappas, “Statistical Learning Theory for Control: A Finite-Sample Perspective,” *IEEE Control Systems Magazine*, vol. 43, no. 6, pp. 67–97, December 2023.
- J148. L. Lindemann, M. Cleaveland, G. Shim and G. J. Pappas, “Safe Planning in Dynamic Environments Using Conformal Prediction,” *IEEE Robotics and Automation Letters*, vol. 8, no. 8, pp. 5116–5123, August 2023.
- J147. X. Cai, B. Schlotfeldt, K. Khosoussi, N. Atanasov, G. J. Pappas and J. P. How, “Energy-Aware, Collision-Free Information Gathering for Heterogeneous Robot Teams,” *IEEE Transactions on Robotics*, vol. 39, no. 4, pp. 2585–2602, August 2023.
- J146. N. Dal Fabbro, A. Mitra and G. J. Pappas, “Federated TD Learning over Finite-Rate Erasure Channels: Linear Speedup under Markovian Sampling,” *IEEE Control Systems Letters*, vol. 7, pp. 2461–2466, 2023.
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- J144. L. Lindemann, L. Jiang, N. Matni and G. J. Pappas, “Risk of Stochastic Systems for Temporal Logic Specifications,” *ACM Transactions on Embedded Computing Systems*, vol. 22, no. 3, art. vol. 54, pp. 1–31, May 2023.
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- C71. A. Girard, A. A. Julius and G. J. Pappas, “Approximate Simulation Relations for Hybrid Systems,” in *Proceedings of the IFAC Conference on Analysis and Design of Hybrid Systems (ADHS)*, Alghero, Italy, June 2006.
- C70. A. A. Julius, A. Girard and G. J. Pappas, “Approximate Bisimulation for a Class of Stochastic Hybrid Systems,” in *Proceedings of the American Control Conference (ACC)*, Minneapolis, MN, June 2006.
- C69. H. Yazarel, A. Girard, G. J. Pappas and R. Alur, “Quantifying the Gap Between Embedded Control Models and Time-Triggered Implementations,” in *Proceedings of the IEEE Real-Time Systems Symposium (RTSS)*, Miami, FL, December 2005.
- C68. M. M. Zavlanos and G. J. Pappas, “Controlling Connectivity of Dynamic Graphs,” in *Proceedings of the 44th IEEE Conference on Decision and Control (CDC)*, Seville, Spain, December 2005.
- C67. A. Girard and G. J. Pappas, “Approximate Bisimulations for Nonlinear Dynamical Systems,” in *Proceedings of the 44th IEEE Conference on Decision and Control (CDC)*, Seville, Spain, December 2005.
- C66. A. Girard and G. J. Pappas, “Approximate Bisimulations for Constrained Linear Systems,” in *Proceedings of the 44th IEEE Conference on Decision and Control (CDC)*, Seville, Spain, December 2005.
- C65. N. Giorgetti, G. J. Pappas and A. Bemporad, “Bounded Model Checking of Hybrid Dynamical Systems,” in *Proceedings of the 44th IEEE Conference on Decision and Control (CDC)*, Seville, Spain, December 2005.
- C64. G. Fainekos, H. Kress-Gazit and G. J. Pappas, “Hybrid Controllers for Path Planning: A Temporal Logic Approach,” in *Proceedings of the 44th IEEE Conference on Decision and Control (CDC)*, Seville, Spain, December 2005.
- C63. G. Mariottini, G. J. Pappas, D. Prattichizzo and K. Daniilidis, “Vision-Based Localization of Leader-Follower Formations,” in *Proceedings of the 44th IEEE Conference on Decision and Control (CDC)*, Seville, Spain, December 2005.
- C62. G. Fainekos, H. Kress-Gazit and G. J. Pappas, “Temporal Logic Motion Planning for Mobile

- Robots,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Barcelona, Spain, April 2005.
- C61. B. Grocholsky, R. Swaminathan, J. Keller, V. Kumar and G. J. Pappas, “Information Driven Coordinated Air-Ground Proactive Sensing,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, Barcelona, Spain, April 2005.
- C60. S. Prajna, A. Jadbabaie and G. J. Pappas, “Stochastic Safety Verification Using Barrier Certificates,” in *Proceedings of the 43rd IEEE Conference on Decision and Control (CDC)*, The Bahamas, December 2004. **Finalist, IEEE CSS CDC Best Student Paper Award**
- C59. H. Yazarel, S. Prajna and G. J. Pappas, “S.O.S. for Safety,” in *Proceedings of the 43rd IEEE Conference on Decision and Control (CDC)*, The Bahamas, December 2004.
- C58. S. Bayraktar, G. Fainekos and G. J. Pappas, “Experimental Cooperative Control of Fixed-Wing Unmanned Aerial Vehicles,” in *Proceedings of the 43rd IEEE Conference on Decision and Control (CDC)*, The Bahamas, December 2004.
- C57. V. Isler, C. Belta, K. Daniilidis and G. J. Pappas, “Hybrid Control for Visibility-Based Pursuit Evasion Games,” in *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Sendai, Japan, September 2004.
- C56. B. Grocholsky, S. Bayraktar, V. Kumar and G. J. Pappas, “UAV and UGV Collaboration for Active Ground Feature Search and Localization,” in *Proceedings of the AIAA 3rd “Unmanned Unlimited” Technical Conference, Workshop and Exhibit*, vol. 2, pp. 812–819, Chicago, IL, September 2004.
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- C53. H. Yazarel and G. J. Pappas, “Geometric Programming Relaxations for Linear System Reachability,” in *Proceedings of the American Control Conference (ACC)*, Boston, MA, June 2004. **Finalist, AACC American Control Conference Best Student Paper Award**
- C52. P. Tabuada and G. J. Pappas, “Finite Bisimulations of Controllable Linear Systems,” in *Proceedings of the 42nd IEEE Conference on Decision and Control (CDC)*, Maui, Hawaii, December 2003.
- C51. P. Tabuada and G. J. Pappas, “From Discrete Specifications to Hybrid Control,” in *Proceedings of the 42nd IEEE Conference on Decision and Control (CDC)*, Maui, Hawaii, December 2003.
- C50. P. Tabuada and G. J. Pappas, “Hierarchical Trajectory Generation for a Class of Nonlinear Systems,” in *Proceedings of the 42nd IEEE Conference on Decision and Control (CDC)*, Maui, Hawaii, December 2003.
- C49. H. Tanner, A. Jadbabaie and G. J. Pappas, “Stable Flocking of Mobile Agents, Part I: Fixed Topology,” in *Proceedings of the 42nd IEEE Conference on Decision and Control (CDC)*, Maui, Hawaii, December 2003.
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- C46. H. Tanner and G. J. Pappas, “Abstractions of Constrained Linear Systems,” in *Proceedings of the American Control Conference (ACC)*, Denver, CO, June 2003.
- C45. E. Haghverdi, P. Tabuada and G. J. Pappas, “Bisimulation Relations for Dynamical and Control Systems,” in *Proceedings of Category Theory and Computer Science, Electronic Notes in Theoretical Computer Science*, Ottawa, Canada, February 2003.
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- C39. E. Haghverdi, P. Tabuada and G. J. Pappas, “Unifying Bisimulation Relations for Discrete and Continuous Systems,” in *Proceedings of the International Symposium on Mathematical Theory of Networks and Systems (MTNS)*, Notre Dame, IN, August 2002.
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- C37. H. Tanner and G. J. Pappas, “Formation Input-To-State Stability,” in *Proceedings of the IFAC World Congress*, Barcelona, Spain, July 2002.
- C36. H. Tanner and G. J. Pappas, “Simulation Relations for Discrete-Time Linear Systems,” in *Proceedings of the IFAC World Congress*, Barcelona, Spain, July 2002.
- C35. P. Tabuada, G. J. Pappas and P. Lima, “Decentralizing Formations of Multi-Agent Systems,” in *Proceedings of the Mediterranean Conference on Control and Automation (MED)*, Lisbon, Portugal, July 2002.
- C34. P. Mishra and G. J. Pappas, “Flying Hot Potatoes,” in *Proceedings of the American Control Conference (ACC)*, pp. 754–759, Anchorage, Alaska, May 2002.
- C33. H. Tanner, V. Kumar and G. J. Pappas, “The Effect of Feedback and Feedforward on Formation ISS,” in *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*, pp. 3448–3453, Arlington, VA, May 2002.
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- C4. G. J. Pappas, D. N. Godbole and J. Lygeros, "Stabilization and Tracking of Feedback Linearizable Systems under Input Constraints," in *Proceedings of the 34th IEEE Conference on Decision and Control (CDC)*, pp. 596–601, New Orleans, 1995.
- C3. S. Sastry, G. Meyer, C. Tomlin, J. Lygeros, D. Godbole and G. J. Pappas, "Hybrid Control in Air Traffic Management Systems," in *Proceedings of the 34th IEEE Conference on Decision and Control (CDC)*, pp. 1478–1483, New Orleans, 1995.
- C2. G. J. Pappas and K. J. Kyriakopoulos, "Dynamic Modeling and Tracking Control of Nonholonomic Vehicles," in *Proceedings of the IFAC World Congress*, pp. 61–64, Sydney, Australia, 1993.
- C1. G. J. Pappas and K. J. Kyriakopoulos, "Modeling and Feedback Control of Nonholonomic Vehicles," in *Proceedings of the 31st IEEE Conference on Decision and Control (CDC)*, pp. 2680–2685, Tucson, 1992.

EDITORIALS

- E5. K. H. Johansson, G. J. Pappas, P. Tabuada and C. J. Tomlin, “Guest Editorial: Special Issue on Control of Cyber-Physical Systems,” *IEEE Transactions on Automatic Control*, vol. 59, no. 12, pp. 3120–3121, December 2014.
- E4. O. Khatib, V. Kumar and G. J. Pappas, “Editorial: Special Issue on the Eleventh International Symposium on Experimental Robotics,” *International Journal of Robotics Research*, vol. 29, no. 5, pp. 483–484, April 2010.
- E3. R. Alur and G. J. Pappas, “Introduction to the Special Issue on Hybrid Systems: Computation and Control,” *Formal Methods in System Design*, vol. 32, no. 1, p. 1, February 2008.
- E2. M. B. Egerstedt, E. Frazzoli and G. J. Pappas, “Special Section on Symbolic Methods for Complex Control Systems,” *IEEE Transactions on Automatic Control*, vol. 51, no. 6, pp. 921–923, June 2006.
- E1. P. Tabuada and G. J. Pappas, “Corrigendum to ‘Hierarchical Trajectory Refinement for a Class of Nonlinear Systems’,” *Automatica*, vol. 42, no. 3, 2006.

WHITE PAPERS AND ESSAYS

- W5. C. L. Bethel, H. I. Christensen, O. C. Jenkins, G. J. Pappas, H. Yanco and H. Griffin, “Securing the Robotics Supply Chain: Technical Needs and Investment Opportunities for the Domestic Robotics Research Ecosystem,” Computing Community Consortium white paper, Computing Research Association, October 2026.
- W4. G. J. Pappas, “Mentor the Researcher, Not the Research: An Essay on PhD Mentoring,” *University of Pennsylvania Almanac*, vol. 63, no. 25, February 2017.
- W3. E. Mynatt, D. Lopresti, G. J. Pappas, J. Clark, G. Morrisett, S. Patel, G. Hager, K. Nahrstedt, J. Rexford, H. Wright and B. Zorn, “A National Research Agenda for Intelligent Infrastructure,” Computing Community Consortium white paper, arXiv, 2017.
- W2. C. Dwork and G. J. Pappas, “Privacy in Information-Rich Intelligent Infrastructure,” Computing Community Consortium white paper, arXiv, 2017.
- W1. R. Mangharam, H. Balakrishnan, L. Richards, M. Reyerson, A. Bayen, L. Bagley, S. Viscelli, S. Amin and G. J. Pappas, “Mobility21: Strategic Investments for Transportation Infrastructure & Technology,” Computing Community Consortium white paper, arXiv, 2017.

PATENTS**ISSUED PATENTS**

- PT2. G. J. Pappas, H. Hassani and A. Robey, “Model-Based Robust Deep Learning,” U.S. Patent 11,961,283, issued April 16, 2024.
- PT1. K. Daniilidis, S. L. Bowman, N. A. Atanasov and G. J. Pappas, “Probabilistic Data Association for Simultaneous Localization and Mapping,” U.S. Patent 11,187,536, issued November 30, 2021.

PUBLISHED PATENT APPLICATIONS

- PA2. A. Robey, H. Hassani, E. Wong and G. J. Pappas, “Defending Large Language Models Against Jailbreaking Attacks,” U.S. Patent Application 2026/0099593, published April 9, 2026.
- PA1. P. Perdikaris, J. H. Seidman, G. Kissas and G. J. Pappas, “Computer Systems and Methods for Learning Operators,” U.S. Patent Application 2023/0214661, published July 6, 2023.

PLENARY, KEYNOTE, AND MAJOR LECTURES

1. Plenary Speaker, American Control Conference, July 2025
2. Keynote, NSF Cyber-Physical Systems PI Meeting, November 2022
3. Plenary Session, World Artificial Intelligence Conference (WAIC), Shanghai, China, July 2021
4. Plenary Speaker, 39th Chinese Control Conference, Shenyang, China, July 2020
5. Semi-Plenary Speaker, 21st IFAC World Congress, Berlin, Germany, July 2020
6. Keynote, CPS-IoT Week, Sydney, Australia, April 2020
7. Plenary Speaker, 38th Benelux Meeting on Systems and Control, Belgium, March 2019
8. Astor Visiting Lectureship, University of Oxford, Oxford, UK, October 2018
9. Vistas in Control Symposium, ETH Zurich, Switzerland, September 2018
10. Keynote Speaker, Florida Institute for National Security, Gainesville, FL, April 2017
11. Panel Keynote, CPS and IoT Foundations, NSF CPS PI meeting, Arlington, VA, November 2016
12. Keynote Speaker, 45th International Conference on Parallel Processing, Philadelphia, PA, August 2016
13. Banquet Keynote, Future of ECE (S. Sastry 60th Birthday), Berkeley, CA, May 2016
14. Keynote, Perspectives in Systems and Control (M. Morari 65th Birthday), Zurich, Switzerland, May 2016
15. Plenary, International Conference on Complex Systems Engineering, Hartford, CT, November 2015
16. Keynote, European Forum Alpbach, Technology Symposium, Alpbach, Austria, August 2015
17. Keynote, ECEDHA Annual Conference & Expo, Hilton Head, SC, March 2015
18. George H. Heilmeier Lecture, University of Pennsylvania, March 2015
19. Mercer Distinguished Lecture, Rensselaer Polytechnic Institute, Troy, NY, February 2015
20. Session Keynote, IEEE/RSJ IROS, Chicago, IL, September 2014
21. Science Keynote, NSF Cyber-Physical Systems PI Meeting, Arlington, VA, October 2013
22. Williams Symposium on Logic, Philosophy, and Technology, University of Pennsylvania, September 2013
23. Decision and Control Laboratory Student Symposium, Georgia Institute of Technology, April 2013
24. Science Keynote, NSF Cyber-Physical Systems PI Meeting, National Harbour, MD, October 2012
25. 22nd International Conference on Automated Planning and Scheduling (ICAPS), Atibaia, Brazil, June 2012
26. 4th IFAC Conference on Analysis and Design of Hybrid Systems (ADHS), Eindhoven, Netherlands, June 2012
27. NIST Workshop on Foundations for Innovation in Cyber-Physical Systems, Chicago, IL, April 2012
28. 50th IEEE Conference on Decision and Control and ECC (CDC-ECC), Orlando, FL, December 2011
29. NSF Cyber-Physical Systems PI Meeting, National Harbour, MD, August 2011
30. 11th Annual High Confidence Software and Systems (HCSS), Annapolis, MD, May 2011
31. 4th Cyber-Physical Systems Week (CPSWEEK), Chicago, IL, April 2011
32. 22nd Chinese Conference on Decision and Control (CCDC), Xuzhou, China, May 2010
33. 7th Formal Modeling and Analysis of Timed Systems (FORMATS), Budapest, Hungary, September 2009
34. 3rd Coordinated Science Laboratory (CSL) Student Conference, UIUC, January 2009
35. Nokia Distinguished Seminar, University of California, Berkeley, November 2008
36. IFAC Workshop on Multi-Vehicle Systems, Salvador, Brazil, October 2006

UNIVERSITY SERVICE

UNIVERSITY, SCHOOL AND DEPARTMENT COMMITTEES

1. Vice Provost for Research Council, January 2008–June 2012 and July 2024–present
2. SEAS COVID-19 Mission Continuity Committee, March 2020–September 2021
3. Jerome Fisher M&T Program Faculty Director Search Committee, April 2015–May 2016
4. ESE Department Chair Search Committee, September 2009–March 2010
5. SEAS Faculty Council, August 2007–June 2012
6. Chair, ESE Faculty Search Committee (Embedded Systems), September 2006–June 2007
7. ESE Faculty Search Committee (Communications and Networking), September 2005–June 2006
8. University Consultative Review Committee for the Dean of SEAS, March–May 2005
9. Consultative Committee for the Chair of MEAM, March–May 2005
10. Consultative Committee for the Chair of ESE, August 2002–August 2004
11. SEAS Graduate Affairs Committee, July 2001–August 2005
12. Electrical Engineering and Systems Engineering Merger Committee, Spring–Fall 2001
13. Electrical Engineering Self-Evaluation and Strategic Planning Committee, Fall 2000

NATIONAL AND GOVERNMENT SERVICE

NATIONAL ACADEMIES AND FEDERAL ADVISORY SERVICE

1. Member, NAE Section 7 Peer Committee, 2026–present
2. Member, NAE Section 7 Search Committee, 2024–present
3. Co-chair, NAE Frontiers of Engineering (FoE), University of Pennsylvania, Philadelphia, September 2025
4. Chair, National Academies CSTB Study on Using ML in Safety Critical Systems, March 2023–October 2025
5. Member, National Academies Review Panel for NIST Information Technology Laboratory, 2015–2016
6. Member, National Science Foundation CNS Division Director Search Committee, Spring 2014
7. Member, National Academies CSTB Study on Cyber-Physical Systems Education, 2013–2016

WORKSHOPS AND STUDIES

1. Co-organizer, NSF-ECEDHA (ECE Department Heads Association) workshop on *ECE Strategic Shaping: Vision, Advocacy, Branding* at Georgia Tech, January 2016
2. Co-organizer, NSF Cyber-Physical Systems Summit, St. Louis, MO, April 2008
3. Program Committee, NSF Workshop on *Cyber-Physical Systems*, Austin, TX, October 2006
4. Co-organizer, NSF-IST-TEKES workshop on *Long Term Challenges in High Confidence Composable Embedded Systems*, Helsinki, Finland, June 2006
5. Co-organizer, EU-US workshop on *Large ICT-based Infrastructures and Interdependencies: Control, Safety, Security and Dependability*, Washington, D.C., March 2006
6. Member, DARPA Information Science and Technology (ISAT) summer study, *Embedded Humans*, Woods Hole, MA, August 2005
7. Member, DARPA ISAT Incubator study, *Beyond Video*, Institute for Defense Analyses, Alexandria, VA
8. Co-organizer, National Coordinating Office (NCO)–NSF Workshop on *High Confidence Medical Device Software and Safety*, Philadelphia, PA, June 2005
9. Co-organizer, National Coordinating Office (NCO)–NSF Planning Workshop on *High Confidence Medical Device Software and Systems*, Arlington, VA, November 2004

PROFESSIONAL ACTIVITIES

SCIENTIFIC AND ADVISORY BOARDS

1. Council Member, CRA Computing Community Consortium (CCC), 2026–present
2. AIDA External Advisory Board, Boston University, Spring 2026–present
3. HERON Hellenic Robotics Institute, Advisory Board, Greece, Spring 2025–present
4. Center for AI & Robotics, NYU Abu Dhabi, External Advisory Board, Spring 2024–present
5. Advisory Board, ECSE Department, Rensselaer Polytechnic Institute, July 2022–present
6. Member, John Scott Award Advisory Committee, City of Philadelphia, Fall 2020–present
7. External Review Chair, Department of ECE, Johns Hopkins University, Baltimore, MD, November 2026
8. External Review, Department of ECE, CMU, Pittsburgh, PA, April 2023
9. Accreditation Review, ECE Department, Aristotle University, Thessaloniki, February 2021
10. Advisory Board, ESE Department, Washington University in St. Louis, 2020–2022
11. Advisory Board, ECE Department, Boston University, Fall 2020
12. External Review, Department of ECE, University of Virginia, October 2020
13. Advisory Board, ECE Department, University of Washington, 2019–2021
14. External Panel Member, Germany Excellence Strategy, TU Munich, February 2019
15. Advisory Board, ECE Department, George Washington University, November 2018
16. External Review, Department of ECE, Boston University, Boston, MA, November 2016
17. External Review, Department of ECE, Cornell University, Ithaca, NY, September 2016
18. External Review, Department of ECE, Technical University of Munich, Munich, Germany, April 2016
19. Advisory Board, Institute for Advanced Studies, Lucca, Italy, July 2012–July 2016
20. Chair, NSF Cyber-Physical Systems (CPS) Academic Executive Board, 2010–2012
21. International Advisory Board Member, Embedded Systems Institute, Eindhoven, Netherlands, 2006–2010

SOCIETY LEADERSHIP AND COMMITTEES

1. Member, IEEE Control Systems Society Nominating Committee, 2026–present
2. Member, AACC Bellman Award Committee, 2021–2024
3. Member, IEEE Control Systems Society, Board of Governors, January 2019–December 2021
4. Chair, IEEE Control Systems Letters Outstanding Paper Award Committee, 2019–2020
5. Member, IFAC Technical Committee on Discrete Event and Hybrid Systems, 2008–2012
6. Secretary/Treasurer, ACM Special Interest Group on Embedded Systems (SIGBED), July 2007–June 2009
7. Steering Committee, *Hybrid Systems: Computation and Control* (HSCC), Member 2003–2012; Chair 2006–2011 and 2014–2017
8. Member: IEEE (Fellow; Control Systems Society, Robotics and Automation Society), IFAC (Fellow), AAAS (Fellow), ACM (SIGBED), SIAM (Control and Dynamical Systems), ASEE

EDITORIAL BOARDS

1. Advisory Editorial Board, *IEEE Online Journal of Control Systems*, 2021–present
2. Guest Co-Editor, *Artificial Intelligence*, Special Issue on Risk-Aware Autonomous Systems, 2021–2022
3. Editorial Board, *Annual Reviews in Control*, 2020–2026
4. Guest Co-Editor, *IEEE Transactions on Automatic Control*, Special Issue on Learning and Control, 2020–2022
5. Associate Editor, *Conference Editorial Board*, IEEE International Conference on Robotics and Automation (ICRA), 2007 and 2017
6. Guest Co-Editor, *IEEE Transactions on Automatic Control*, Special Issue on Control for Cyber-Physical Systems, 2012–2013

7. Guest Co-Editor, *International Journal of Robotics Research*, Special Issue on International Symposium on Experimental Robotics, October 2008
8. Guest Co-Editor, *Formal Methods in System Design*, Special Issue on Hybrid Systems: Computation and Control, February 2008
9. Associate Editor, *IEEE Transactions on Automatic Control*, January 2005–December 2007
10. Guest Co-Editor, *IEEE Transactions on Automatic Control*, Special Issue on Symbolic Methods for Control Systems, 2004–2005
11. Associate Editor, *Conference Editorial Board*, IEEE Control Systems Society, July 2002–July 2005

CONFERENCE ORGANIZATION

1. Robotics: Science and Systems, Advisory Board, Athens, Greece, 2027
2. Steering Committee Member, *International Conference on Neuro-symbolic Systems (NeuS)*, 2024–present
3. General Co-Chair and Program Co-Chair, 2nd International Conference on Neuro-symbolic Systems (NeuS), Philadelphia, May 2025
4. General Co-Chair, 5th Conference on Learning for Dynamics and Control (L4DC), Philadelphia, June 2023
5. IEEE RAS ICRA Steering Committee Chair, 2022–2025
6. General Co-Chair, IEEE International Conference on Robotics and Automation (ICRA), Philadelphia, 2022
7. Co-Chair, 3rd Conference on Learning for Dynamics and Control (L4DC), Zurich, Switzerland, June 2021
8. Co-Chair, 2nd Conference on Learning for Dynamics and Control (L4DC), Berkeley, CA, June 2020
9. Co-Chair, 1st Conference on Learning for Dynamics and Control (L4DC), MIT, May 2019
10. Best Student Paper Award Committee, IEEE Conference on Decision and Control, 2018
11. Program Vice Chair, Tutorials, IEEE Conference on Decision and Control, December 2016
12. General Co-Chair, *First International Workshop on the Swarm at the Edge of the Cloud*, Montreal, Canada, September 2013
13. Industry Chair, *Cyber-Physical Systems Week (CPSWEEK)*, Philadelphia, PA, April 2013
14. General Chair, *4th ACM Workshop On Embedded Systems For Energy-Efficiency In Buildings (BuildSys)*, Toronto, Canada, November 2012
15. Program Chair, *19th Mediterranean Conference on Control and Automation*, Corfu, Greece, June 2011
16. Steering Committee Chair, *Cyber-Physical Systems Week (CPSWEEK)*, 2008–2011, 2014–2017
17. Co-Chair, *International Symposium on Experimental Robotics (ISER)*, Athens, Greece, July 2008
18. Local Arrangements Chair, *Robotics: Science and Systems*, Philadelphia, PA, August 2006
19. Workshop Co-Organizer, ARO workshop on *Swarming in Natural and Engineered Systems*, Napa Valley, CA, August 2005
20. Workshop Co-Chair, *Northeast Student Workshop on Nonlinear and Hybrid Control*, Troy, NY, April 2005
21. Workshops Chair, *IEEE Conference on Decision and Control*, The Bahamas, December 2004
22. Conference Co-Chair, *Hybrid Systems: Computation and Control*, Philadelphia, PA, March 2004
23. Workshop Chair, *Embedded Systems Education*, EMSOFT, Philadelphia, October 2003

WORKSHOP AND TUTORIAL ORGANIZATION

1. Co-organized (with C. Amo Alonso and P. Tabuada) a workshop on *Large Language Models and Control* at the 64th IEEE Conference on Decision and Control, Rio de Janeiro, Brazil, December 2025
2. Co-organized (with Y. Jedra, N. Matni, A. Tsiamis, and I. Ziemann) a tutorial session on *Statistical Learning Theory for Identification and Control* at the 62nd IEEE Conference on Decision and Control, Singapore, December 2023
3. Co-organized (with A. Tsiamis, I. Ziemann, and N. Matni) a workshop on *Statistical Learning Theory for Control* at the IEEE Conference on Decision and Control, December 2022
4. Co-organized (with N. Matni and C. Allen-Blanchette) a workshop on *Robust Deep Learning-Based Control* at the IEEE Conference on Decision and Control, December 2021

5. Co-organized (with A. Bayen, B. Piccoli, D. B. Work, J. Sprinkle, M. L. Delle Monache, B. Seibold, C. Wu, and others) a workshop on *Lagrangian Control for Traffic Flow Smoothing in Mixed Autonomy Settings* at the 58th IEEE Conference on Decision and Control, Nice, France, December 2019
6. Co-organized (with M. Zavlanos) a mini-workshop on *Learning for Control* at the NSF Cyber-Physical Systems PI Meeting, Arlington, VA, November 2019
7. Co-organized (with M. Morari, P. Khargonekar, and K. Gatsis) a tutorial workshop on *Learning for Control* at the 57th IEEE Conference on Decision and Control, Miami, FL, December 2018
8. Co-organized (with S. Day, B. Sinopoli, and L. Shi) an open invited session workshop on *Security and Privacy for networked multi-agent cyber-physical systems* at IFAC World Congress, Toulouse, France, July 2017
9. Co-organized (with H. Kress-Gazit) a workshop on *Formal methods in robotics and automation* at the IEEE International Conference on Robotics and Automation, Kobe, Japan, May 2009
10. Co-organized (with R. Ghrist and S. LaValle) a workshop on *Topology and Minimalism in Robotics and Sensor Networks* at Robotics: Science and Systems, Zurich, Switzerland, August 2008
11. Co-organized (with C. Belta) a workshop on *Symbolic approaches to robot motion planning and control* at Robotics: Science and Systems, Philadelphia, PA, August 2006
12. Co-organized (with S. Roumeliotis and S. Singh) a workshop on *Multi-robot Search and Rescue: Current Challenges and Future Directions* at the 2004 IEEE International Conference on Robotics and Automation, New Orleans, LA, April 2004
13. Co-organized (with J. Lygeros and S. Sastry) a tutorial workshop on *Hybrid Systems: Modeling, Analysis, and Control* at the 38th IEEE Conference on Decision and Control, Phoenix, AZ, December 1999
14. Co-organized (with J. Lygeros) a tutorial workshop on *Hybrid Systems: Modeling, Analysis, and Control* at the 14th IEEE Symposium on Intelligent Control, Intelligent Systems and Semiotics, Cambridge, MA, September 1999
15. Co-organized (with J. Lygeros and S. Sastry) a tutorial workshop on *Hybrid Systems: Modeling, Analysis, and Control* at the 37th IEEE Conference on Decision and Control, Tampa, FL, December 1998

INVITED SESSION ORGANIZATION

1. Co-organized (with Y. Gao, L. Lindemann, C. Fan, and A. Abate) four invited sessions on *Safe Planning and Control with Uncertainty Quantification* at the 62nd IEEE Conference on Decision and Control, Singapore, December 2023
2. Co-organized (with J. Anderson and A. Mitra) four invited sessions on *Learning and Decision-Making in Multi-Agent Systems* at the 62nd IEEE Conference on Decision and Control, Singapore, December 2023
3. Co-organized (with T. Beckers, J. Matschek, S. Hirche, and R. Findeisen) an invited session on *Gaussian Process based Identification and Control* at the IFAC World Congress, Yokohama, Japan, July 2023
4. Co-organized (with L. Lindemann, A. Tsiamis, M. Chapman, and D. Kalogerias) an invited session on *Risk-aware learning, verification, and control* at the 61st IEEE Conference on Decision and Control, Cancun, December 2022
5. Co-organized (with T. Beckers) an invited session on *Gaussian Process based Optimization and Control* at the 60th IEEE Conference on Decision and Control, Austin, TX, December 2021
6. Co-organized (with M. Schulze Darup and F. Farokhi) an invited session on *Encrypted Control and Optimization* at the 57th IEEE Conference on Decision and Control, Miami, FL, December 2018
7. Co-organized (with S. Pequito and F. Pasqualetti) an invited session on *Neuroscience and control* at the 2016 American Control Conference, July 2016
8. Co-organized (with S. Han) an invited session on *Privacy in systems and control* at the 2016 American Control Conference, July 2016
9. Co-organized (with S. Pequito and V. Preciado) an invited session on *Controllability and design of networks* at the 54th IEEE Conference on Decision and Control, Osaka, Japan, December 2015
10. Co-organized (with S. Han and J. Le Ny) two invited sessions on *Privacy in Systems and Control* at the 53rd IEEE Conference on Decision and Control, Los Angeles, CA, December 2014
11. Co-organized (with V. Preciado) an invited session on *Epidemic Control* at the 53rd IEEE Conference

- on Decision and Control, Los Angeles, CA, December 2014
12. Co-organized (with F. Borrelli) an invited session on *Green Buildings: Challenges and Opportunities* at the 50th IEEE Conference on Decision and Control, Orlando, FL, December 2011
 13. Co-organized (with S. Azuma) an invited session on *Multivehicle Trajectory Optimization* at the 2010 American Control Conference, Baltimore, MD, July 2010
 14. Co-organized (with S. Azuma) an invited session on *Quantization in Control* at the 2010 American Control Conference, Baltimore, MD, July 2010
 15. Co-organized (with H. Asada) an invited session on *Advances in Biological and Bioinspired Systems* at the 2007 American Control Conference, New York, NY, July 2007
 16. Co-organized (with A. van der Schaft) an invited session on *Compositionality challenges in system theory* at the 41st IEEE Conference on Decision and Control, Las Vegas, NV, December 2002
 17. Co-organized (with J. van Schuppen) an invited session on *Control and algebra* at the 15th International Symposium on Mathematical Theory of Networks and Systems, Notre Dame, IN, August 2002
 18. Co-organized (with P. Lima) an invited session on *Multi-Agent Systems* at the 10th Mediterranean Conference on Control and Automation, Lisbon, Portugal, July 2002
 19. Co-organized (with J. Lygeros and P. Antsaklis) two invited sessions on *Hybrid Systems: Theory and Applications* at the 8th IEEE Mediterranean Conference on Control and Automation, Patras, Greece, July 2000
 20. Co-organized (with C. Tomlin and S. Sastry) two invited sessions on *Next Generation Air Traffic Management Systems* at the 36th IEEE Conference on Decision and Control, San Diego, CA, December 1997
 21. Co-organized (with L. Bushnell and S. Sastry) a symposium on *New Challenges in Nonlinear Control Systems* at the 2nd IFNA World Congress of Nonlinear Analysts, Athens, Greece, July 1996

PANELS

1. *Greek AI Ecosystem*, Greeks in AI, Athens, Greece, July 2025
2. *Impact of AI in ECE*, Annual ECEDHA Conference, Tucson, Arizona, March 2019
3. *Robotics in ECE Departments*, Annual ECEDHA Conference, Tucson, Arizona, March 2019
4. *AAAS Panel on Transforming Cities, Transportation, and Agriculture with Intelligent Infrastructure*, Austin, February 2018
5. *NSF-ECEDHA Workshop in ECE Strategic Shaping: Vision, Advocacy, Branding*, Georgia Tech, Atlanta, January 2016
6. *NITRD Cybersecurity & Cyber-Physical Systems: Research Directions*, CPSWEEK, Berlin, Germany, April 2014
7. *STEM Outreach: Inspiring Students to Study Engineering*, ECEDHA Annual Conference and ECExpo, Orlando, FL, March 2013
8. *CPS Forum*, CPSWEEK, Chicago, IL, April 2011
9. *Industry–Academy Partnerships in CPS Research*, George Mason University, May 2009
10. *Cyber-Physical Systems Forum*, Educational Challenges, CPSWEEK, San Francisco, CA, April 2009
11. *Cyber-Physical Systems: Cross Disciplinary Challenges*, NSF CPS Information Day, December 2008
12. *From Embedded Systems to Cyber-Physical Systems: a Review of the State-of-the-Art and Research Needs*, Cyber-Physical Systems Week, St. Louis, April 2008
13. *Challenges and Opportunities for Multi-Vehicle Systems*, IFAC Workshop on Multi-Vehicle Systems, Salvador, Brazil, October 2006
14. *Intelligent Control Imitating Biology: Promises, Challenges and Lessons*, 2003 IEEE International Symposium on Intelligent Control, Houston, TX, October 2003
15. *Advanced hybrid systems theory*, EU/USA panel discussion at 15th World Congress of International Federation on Automatic Control, Barcelona, Spain, July 2002
16. *Hybrid Systems Applications*, Hybrid Systems: Computation and Control, Rome, Italy, March 2001

PRESS COVERAGE (SELECTED)

AI SAFETY, JAILBREAKING, AND ROBOTICS SECURITY

1. *TechTarget*, “Humanoid Buildup Overlooks the Robots Already Running Factories,” October 1, 2026.
Commentary on safety and security as prerequisites for personal and humanoid robotics.
2. *IEEE Spectrum*, “Rethinking Robot Safety in the Age of AI,” September 16, 2026.
Discusses RoboPAIR jailbreaking of LLM-controlled robots.
3. *FastForward (Cyprus News Agency)*, “Researchers Study the Safety of AI-Powered Robots,” May 11, 2026.
Interview on PAIR, RoboPAIR, RoboGuard and context-aware safety for robots.
4. *Athens-Macedonian News Agency (ANA-MPA)*, “When a Robot Is Persuaded Within Minutes to Carry a Bomb,” May 10, 2026.
Interview on RoboPAIR and RoboGuard, syndicated by ERT, SKAI, Proto Thema, Capital.gr, iefimerida, Economix and Sofokleousin (in Greek).
5. *Penn Today / Penn Engineering*, “What It Will Take to Make AI-Enabled Robots Safer,” April 29, 2026.
Coverage of the *Science Robotics* article on context-aware safety for robotic foundation models.
6. *EurekAlert! (AAAS)*, “What It Will Take to Make AI-Enabled Robots Safer,” April 29, 2026.
Press release on the *Science Robotics* article on context-aware safety for robotic foundation models.
7. *The Wire China*, “While Politicians Fret, Unitree Is Selling Robots Across America,” November 23, 2025.
Commentary on academic robotics research and Chinese robot manufacturers.
8. *WIRED*, “Anthropic’s Claude Takes Control of a Robot Dog,” November 12, 2025.
Coverage of RoboGuard safety guardrails for LLM-enabled robots.
9. *Communications of the ACM*, “When Images Fool AI Models,” October 29, 2025.
Features our non-zero-sum adversarial training framework (ICLR 2024) and RoboPAIR robot jailbreaking research.
10. *National Academies of Sciences, Engineering, and Medicine*, “Making Machine Learning Safer in High-Stakes Settings,” October 20, 2025.
Coverage of the National Academies report on ML in safety-critical systems (committee chair).
11. *Forbes*, “Boston Dynamics and Unitree Are Innovating Four-Legged Robots Rapidly,” June 13, 2025.
Coverage of RoboPAIR jailbreaking research on AI-powered robots.
12. *WIRED*, “Google’s Gemini Robotics AI Model Reaches Into the Physical World,” March 12, 2025.
Cites Penn research on jailbreaking LLM-controlled robots (RoboPAIR).
13. *MIT Technology Review*, “Anthropic Has a New Way to Protect Large Language Models Against Jailbreaks,” February 3, 2025.
Coverage of SmoothLLM jailbreak defense system.
14. *Fortune*, “Researchers Say They Had a ‘100% Attack Success Rate’ on Jailbreak Attempts Against Chinese AI Startup DeepSeek,” February 2, 2025.
Coverage of the Cisco–Penn study of DeepSeek R1 jailbreak vulnerabilities.
15. *WIRED*, “DeepSeek’s Safety Guardrails Failed Every Test Researchers Threw at Its AI Chatbot,” January 31, 2025.
Coverage of the Cisco–Penn study of DeepSeek R1 jailbreak vulnerabilities.
16. *Cisco Security Blog*, “Evaluating Security Risk in DeepSeek and Other Frontier Reasoning Models,” January 31, 2025.
Collaboration with Cisco/Robust Intelligence on DeepSeek R1 security vulnerabilities, achieving 100% attack success rate.
17. *Princeton AI*, “Symposium Fosters Collaboration Between Robotics and AI,” December 5, 2024.
Coverage of robot safety symposium and RoboPAIR Best Paper Award.
18. *WIRED*, “Researchers Developed a Way to Get AI to Attack Robots and Cause Real-World Mayhem,” December 4, 2024.
Coverage of RoboPAIR algorithm for jailbreaking LLM-controlled robots.
19. *Bank Info Security*, “It’s ‘Alarmingly Easy’ to Jailbreak LLM-Controlled Robots,” November 18, 2024.

- Coverage of robot jailbreaking research and security implications.
20. *IEEE Spectrum*, “It’s Surprisingly Easy to Jailbreak LLM-Driven Robots,” November 11, 2024.
Feature article on RoboPAIR achieving 100% jailbreak rate on commercial robotic systems.
 21. *Digital Trends*, “Researchers Show That AI-Controlled Robots Can Be Jailbroken,” October 31, 2024.
Coverage of Penn Engineering AI robot vulnerability research.
 22. *The Independent (UK)*, “AI-Controlled Robots Can Be Jailbroken, and the Results Could Be Disastrous,” October 17, 2024.
Coverage of critical vulnerabilities discovered in AI-enabled robots.
 23. *EurekAlert! (AAAS)*, “Penn Engineering Research Discovers Critical Vulnerabilities in AI-Enabled Robots,” October 17, 2024.
Press release on responsible innovation initiative and robot safety research.
 24. *IoT Technology News*, “Jailbreaking AI Robots: Researchers Sound Alarm Over Security Flaws,” October 2024.
Coverage of RoboPAIR and safety vulnerabilities in AI-powered robotics.
 25. *The Washington Post*, “AI Researchers Challenge Big Tech, Seek ‘Safe Harbor’ for Testing,” March 5, 2024.
Coverage of red teaming policy proposal and AI safety research access.
 26. *Knight First Amendment Institute at Columbia University*, “A Safe Harbor for AI Evaluation and Red Teaming,” 2024.
Coverage of red teaming policy proposal for responsible AI research.
 27. *WIRED*, “Researchers Used AI to Design a Worm That Can Hack Your Email,” December 5, 2023.
Coverage of PAIR algorithm for automated LLM jailbreaking.
 28. *VentureBeat*, “New Method Reveals How One LLM Can Be Used to Jailbreak Another,” November 7, 2023.
Coverage of Prompt Automatic Iterative Refinement (PAIR) algorithm.

GENERAL PRESS, INTERVIEWS, AND COMMENTARY

1. *The Daily Pennsylvanian*, April 14, 2026.
Interview on the Penn Engineering Futures Fund.
2. *The Daily Pennsylvanian*, “Five Penn Professors Named Honorary Fellows for Advancement of Science,” March 30, 2026.
Coverage of election as AAAS Fellow.
3. *Greek Media*, “George Pappas comments on the new EU AI Act,” March 2024.
Commentary on EU AI regulation and policy implications (in Greek).
4. *Penn Today / Penn Engineering*, “George Pappas on the new AI undergraduate program at Penn,” February 2024.
Coverage of the launch of the Raj and Neera Singh Program in AI—the first named AI undergraduate degree in the Ivy League.
5. *The Daily Pennsylvanian*, “George Pappas’ NAE Election,” February 12, 2024.
Coverage of election to the U.S. National Academy of Engineering.
6. *Kathimerini (Greece)*, “AI Revolution in Health,” August 2023.
Commentary on AI applications in healthcare (in Greek).
7. *HIAS Symposium*, “Bridges in Education, Science, and Innovation,” July 2023.
Panel discussion on international research collaboration (in Greek).
8. *Kathimerini (Greece)*, “Training Greece in Innovation,” June 24, 2022.
Feature article on education and innovation ecosystems (in Greek).
9. *Kathimerini (Greece)*, “George Pappas Interview,” June 24, 2021.
Extended interview on AI, robotics, and academic research (in Greek).
10. *German Media*, “Wenn Google die Temperatur im Wohnzimmer runterdreht” (When Google turns down the temperature in the living room), September 2015.
Commentary on cyber-physical systems and smart home technology (in German).
11. *MIT News*, “Can control theory make software better?” April 2013.

Expert commentary on the intersection of control theory and software engineering.

RESEARCH FUNDING

CURRENT

1. *Reasoning Jailbreaks for LLMs and Agents*
Coefficient Giving (formerly Open Philanthropy)
PIs: George J. Pappas, Hamed Hassani
07/2025–present.
2. *SCHEMA: Scalable Compositional Hierarchies for Evolvable Multi-agent Architectures*
Air Force Office of Scientific Research (via MIT)
co-PI: George J. Pappas
09/2025–08/2030.
3. *ARL CRA Distributed and Collaborative Intelligent Systems and Technology (DCIST) / ARCHES: Autonomous Resilient Cognitive Heterogeneous Swarms*
Department of the Army, Army Research Laboratory (W911NF-17-2-0181)
Principal Partner: University of Pennsylvania; General Partners: Georgia Institute of Technology, MIT, U.C. Berkeley, USC, UCSD
Penn PI: Vijay Kumar; co-PIs: George J. Pappas (Area Lead), A. Ribeiro, K. Daniilidis
09/2017–12/2027.
4. *Resolution-Invariant Deep Learning for Accelerated Propagation of Epistemic and Aleatory Uncertainty in Multi-Scale Energy Storage Systems, and Beyond*
Department of Energy, Office of Science (DE-SC0024563)
co-PI: George J. Pappas
07/2023–08/2027.
5. *Collaborative Research: EnCORE: Institute for Emerging CORE Methods in Data Science*
National Science Foundation TRIPODS Program (2217062)
PI: Barna Saha (UCSD); Penn co-PIs: George J. Pappas, Hamed Hassani, Aaron Roth
09/2022–08/2027.

PREVIOUS

1. *Collaborative: SLES: Bridging Offline Design and Online Adaptation in Safe Learning-Enabled Systems*
National Science Foundation, Safe Learning-Enabled Systems Program (IIS-2331880)
co-PI: George J. Pappas
10/2023–09/2026.
2. *ERC: IoT4Ag Internet of Things for Precision Agriculture*
National Science Foundation Engineering Research Center Program
Principal Partner: University of Pennsylvania
General Partners: Florida, Purdue, UC Merced
PI: Cherie Kagan (Penn); Penn co-PIs: Troy Olsson, Vijay Kumar, Mark Allen, George J. Pappas
09/2020–08/2026.
3. *LieAD: Uncovering Hidden Linear Structure in Complex Continuum Systems*
Defense Advanced Research Projects Agency (HR0011-25-3-0135)
PI: George J. Pappas
07/2025–07/2026.
4. *Safety Defenses for Jailbreaking LLM-Controlled Robots*
Defense Advanced Research Projects Agency
PI: George J. Pappas
01/2025–03/2026.
5. *Stateful, Reasoning-Based Guardrails for AI Agents*

- Department for Science, Innovation and Technology, United Kingdom (G2-SCH-2025-01-16275)
co-PI: George J. Pappas
08/2025–01/2026.
6. *THEORINET: Transferable, Hierarchical, Expressive, Robust, Interpretable NETWORKs*
National Science Foundation–Simons Foundation Mathematics of Deep Learning Program
PI: Rene Vidal (Johns Hopkins); Penn co-PIs: George J. Pappas, A. Ribeiro, R. Ghrist
12/2020–11/2025.
 7. *HyDDRA: Hybrid Dynamics – Deconstruction and Aggregation*
Air Force Office of Scientific Research MURI (via University of Illinois)
Principal Partner: UIUC; General Partners: Penn, Caltech, UCLA
Penn PI: George J. Pappas; co-PI: Dan Koditschek
06/2023–05/2025.
 8. *CPS: Medium: Robust Learning for Perception-Based Autonomous Systems*
National Science Foundation Cyber-Physical Systems Program
PI: Nikolai Matni (Penn); co-PIs: George J. Pappas, Kostas Daniilidis
01/2018–12/2023.
 9. *Integrated Approaches to High Assurance for Learning Based CPS*
DARPA Assured Autonomy
PI: Insup Lee; co-PIs: George J. Pappas, R. Alur, O. Sokolsky, J. Weimer, N. Bezzo (Virginia)
01/2018–01/2023.
 10. *ECEDHA Research Community Planning Grant*
National Science Foundation
PIs: George J. Pappas (Penn), Bill Sanders (UIUC), Steve McLaughlin (Georgia Tech), Stela Batalama (FAU)
01/2017–12/2022.
 11. *Active Semantic Distributed Perception*
Office of Naval Research
PI: Kostas Daniilidis; co-PI: George J. Pappas
01/2017–12/2022.
 12. *Autonomy in Contested Environments*
AFOSR/AFRL
PI: George J. Pappas; co-PI: Dan Koditschek (Penn)
09/2019–08/2022.
 13. *CPS: Medium: Rethinking Communication and Control for Low-Latency, High Reliability IoT Devices*
National Science Foundation Cyber-Physical Systems Program
PI: George J. Pappas (Penn); co-PIs: Hamed Hassani, Alejandro Ribeiro
09/2018–08/2021.
 14. *Science of Resilience in Financial and Technological Networks*
Rockefeller Foundation
PIs: George J. Pappas (Penn), Rakesh Vohra, Victor Preciado
03/2017–03/2021.
 15. *Low-Latency Communication for Wireless Autonomous Systems*
Intel Science and Technology Center
PIs: Alejandro Ribeiro (Penn), George J. Pappas, Rahul Mangharam, Vijay Kumar
09/2017–08/2020.
 16. *Development of Control-Aware Cyber Techniques for Attack-Resilient Industrial Control & Combat Systems*
Office of Naval Research
PI: Insup Lee; co-PIs: George J. Pappas, Miroslav Pajic (Duke), James Weimer (Penn)
01/2017–12/2019.
 17. *ARL CTA Robotics*
Department of the Army, Army Research Laboratory
Principal Partner: University of Pennsylvania

- General Partners: Georgia Institute of Technology, MIT, U.C. Berkeley, USC, UCSD
 Penn PI: Kostas Daniilidis; co-PIs: George J. Pappas, Jianbo Shi, Mark Yim, Vijay Kumar
 07/2017–09/2019.
18. *NSF/Intel Security and Privacy-Aware Cyber-Physical Systems*
 National Science Foundation–Intel Corporation
 PI: Insup Lee; co-PI: George J. Pappas
 09/2015–08/2018.
 19. *TerraSwarms*
 DARPA Focus Center Research Program
 Berkeley (Lead), Penn, Caltech, CMU, Washington, UCSD, Michigan, Illinois
 Penn PI: George J. Pappas; Penn co-PI: Vijay Kumar
 01/2013–12/2017
 20. *Autonomous Unmanned Vehicles Applied Research Program*
 Office of Naval Research
 PI: George J. Pappas; co-PI: Vijay Kumar
 08/2014–09/2017.
 21. *Technologies for Safe and Efficient Transportation*
 Department of Transportation
 PI: Daniel D. Lee; co-PIs: George J. Pappas, Rahul Mangharam
 09/2015–08/2017.
 22. *AM³ : Autonomous Multifunction Mobile Microsystems*
 Principal Partner: University of Pennsylvania
 General Partners: Georgia Institute of Technology, U.C. Berkeley, University of New Mexico
 Subcontracts : M.I.T., U. of Maryland, Vanderbilt, North Carolina A & T, ACFR Australia
 Penn PI: Vijay Kumar; co-PIs: George J. Pappas, Dan Lee, A. Jadbabaie, K. Daniilidis
 05/2007–04/2017.
 23. *ExCape: Expeditions in Computer Augmented Program Engineering*
 National Science Foundation CISE Expeditions
 Penn (Lead), U.C. Berkeley, M.I.T., Rice, U.C.L.A, Cornell, U.I.U.C., Michigan
 PI: R. Alur; co-PIs: George J. Pappas, B. Thau Loo, M. Martin, S. Zdancewic
 06/2012–03/2017.
 24. *SPARCS: Synthesis of platform-aware attack-resilient control systems*
 DARPA HACMS
 PI: Insup Lee; co-PIs: George J. Pappas, R. Mangharam, O. Sokolsky, N. Michael, S. Weirich, P. Tabuada (UCLA)
 07/2012–02/2017.
 25. *Multiple-level Predictive Control of Mobile Cyber Physical Systems with Correlated Context*
 National Science Foundation CISE CyberPhysical Systems (CPS)
 PI: J. Stankovic (Virginia); co-PIs: Tian He (Minnesota), Shan Lin (Temple), G. J. Pappas,
 09/2012–08/2016.
 26. *Workshop on Strategic Shaping of ECE : Vision, Advocacy, Branding*
 National Science Foundation
 PIs: Steve McLaughlin (Georgia Tech), George J. Pappas (Penn), Bill Sanders (UIUC), Sheila Hemami (Northeastern)
 01/2016–06/2016.
 27. *Greater Philadelphia Innovation Cluster (GPIC)*
 Department of Energy (DoE)
 SEAS PI: George J. Pappas; co-PIs: Rahul Mangharam, Saswati Sarkar, Ben Taskar, Ali Jadbabaie, Rajeev Alur
 02/2011–01/2016.
 28. *Assuring the Safety, Security and Reliability of Medical Device Cyber Physical Systems*
 National Science Foundation CISE CyberPhysical Systems (CPS)

- PI: Insup Lee; co-PIs: Rajeev Alur, Oleg Sokolsky, Clarence W. Hanson, George J. Pappas
09/2010–08/2015.
29. *Quantitative Analysis and Design of Control Networks*
National Science Foundation CISE CyberPhysical Systems (CPS)
PI: G. J. Pappas; co-PIs: R. Alur, I. Lee, A. Ribeiro, R. Mangharam
09/2009–08/2014.
 30. *HUNT: Heterogeneous Unmanned Networked Teams*
Office of Naval Research MURI (Penn (Lead), U.C. Berkeley, Georgia Tech, Arizona State)
Penn PI: G. J. Pappas; Penn co-PIs: D. Koditschek, A. Jadbabaie, V. Kumar.
06/2008–04/2014.
 31. *SUBTLE: Situation Understanding Bot Through Language and Environment*
AFOSR MURI (Penn (Lead), U. Mass,)
PI: Mitch Marcus; co-PIs: N. Badler, A. Joshi, G. Pappas, F. Pereira, M. Romero
05/2007–04/2012.
 32. *Multi-scale Systems Center (MuSyC)*
DARPA
UC Berkeley (Lead), California Institute of Technology, University of Pennsylvania
Penn PI: George J. Pappas
05/2010–12/2010.
 33. *Robust Testing by Testing Robustness of Embedded Systems*
National Science Foundation Computer Systems Research
PI: George J. Pappas; co-PI: Insup Lee
08/2007–07/2010.
 34. *SToMP: Sensor Topology and Minimalist Planning*
DARPA Defense Sciences Office (DSO)
PI: George J. Pappas; co-PIs: Dan Koditschek, Vijay Kumar, Ali Jadbabaie
08/2006–07/2010.
 35. *SWARMS : Scalable sWarms of Autonomous Robots and Mobile Sensors*
Army Research Office MURI (Penn (Lead), Yale, MIT, UC Berkeley, UC Santa Barbara)
PI: V. Kumar; co-PIs: D. Koditschek, A. Jadbabaie, G. J. Pappas.
06/2005–05/2010.
 36. *Bio-inspired Cyber-Physical Systems*
National Science Foundation Computer Systems Research
PI: Vijay Kumar; co-PIs: George J. Pappas, Harvey Rubin
08/2007–07/2009.
 37. *Safety, Security, Rescue, and First Response*
National Science Foundation Industry/University Cooperative Research Centers
PI: Vijay Kumar; co-PIs: M. Yim, G. J. Pappas, K. Daniilidis, C. J. Taylor
09/2007–08/2008.
 38. *Multi-robot emergency response*
National Science Foundation Information Technology Research (ITR) Program
PI: N. Papanikolopoulos (U. Minnesota); Penn co-PIs: K. Daniilidis, G. J. Pappas
09/2003–08/2008.
 39. *Learning Low-Dimensional Controllers for High-Speed Quadruped Locomotion*
DARPA Learning Locomotion
PI: Dan Lee; co-PIs: Dan Koditschek, Vijay Kumar, George J. Pappas, Lawrence Saul
10/2005–06/2008.
 40. *Techniques for Assuring the Safety and Reliability of Physical Computing Systems and Applications to Medical Devices*
National Science Foundation Computer Systems Research (CSR) Program
PI: Insup Lee; co-PIs: Sampath Kannan, George J. Pappas, Victoria Rich, Oleg Sokolsky
06/2005–05/2008.

41. *Distributed Coordination and Cooperative Surveillance for Heterogeneous Groups of Vehicles*
Office of Naval Research (ONR) DURIP Program
PI: A. Jadbabaie; co-PIs: V. Kumar, G.J. Pappas
05/2007–04/2008.
42. *Center for Robotic First Response*
National Science Foundation
PI: Vijay Kumar; co-PIs: George J. Pappas, Mark Yim
09/2006–09/2007.
43. *Formal Analysis and Design of Hybrid Systems*
Supplement to NSF-ITR for NSF ITR - EU IST Collaboration.
US : Rajeev Alur, George J. Pappas (University of Pennsylvania).
EU : Alberto Bemporad (Universita di Siena), John Lygeros (University of Patras/ETH Zurich)
09/2005–09/2007.
44. *Synthesis of Embedded Software from Hybrid Models*
National Science Foundation
PI: Rajeev Alur; co-PI: George J. Pappas
09/2004–08/2007.
45. *Graduate Student Support for Robotics: Science and Systems 2006*
National Science Foundation
PI: Mark Yim; co-PI: George J. Pappas
07/2006–07/2007.
46. *Adaptive Coordinated Control in the Multi-Agent 3D Dynamic Battlefield*
Army Research Office MURI (UC Berkeley, Penn, CMU)
PI: S. Sastry; Penn co-PIs: K. Daniilidis, V. Kumar, G. J. Pappas, C.J. Taylor.
06/2002–05/2007.
47. *Hierarchical Abstractions of Hybrid Systems*
National Science Foundation Presidential Early CAREER (PECASE) Program.
PI: George J. Pappas.
05/2002–04/2007.
48. *Heterogeneous Urban RSTA Team (HURT) - Planning and Control*
DARPA Information Exploitation Office, Subcontract to Honeywell Laboratories
PI: George J. Pappas; co-PIs: Vijay Kumar, Ali Jadbabaie
01/2005–12/2006.
49. *Formal Analysis and Design of Hybrid Systems*
National Science Foundation Information Technology Research (ITR) Program.
PI: Rajeev Alur; co-PI: George J. Pappas.
09/2001–09/2006.
50. *Multiple Agents in Groups for Networked, Unmanned Missions (MAGNUM)*
Army Research Office (ARO) DURIP Program
PI: George J. Pappas; co-PIs: K. Daniilidis, A. Jadbabaie, V. Kumar, C.J. Taylor
05/2004–07/2006.
51. *Algorithmic Synthesis of Embedded Controllers*
National Science Foundation Embedded and Hybrid Systems (EHS) Program
PI: George J. Pappas
08/2003–06/2006.
52. *High Confidence Medical Device Software and Systems (HCMDSS 2005) Workshop*
National Science Foundation
PI: George J. Pappas; co-PI: Insup Lee
05/2005–05/2006.
53. *Proposal for Hybrid Systems : Computation and Control (HSCC 2004) Workshop*
National Science Foundation
PI: Rajeev Alur; co-PI: George J. Pappas

- 12/2003–12/2004.
54. *Modeling, Analysis, and Control of Biomolecular Networks*
DARPA Biocomputation (BIOCOMP) Program.
PI: Harvey Rubin; co-PIs: Rajeev Alur, George J. Pappas, Vijay Kumar.
08/2001–08/2004.
 55. *Hybrid Systems : Computation and Control*
University of Pennsylvania Research Foundation.
PI: George J. Pappas.
07/2003–06/2004.
 56. *Robotics Laboratory and Curriculum Development*
National Science Foundation.
PI: J. Ostrowski; co-PIs: C. N. Dorny, V. Kumar, G. J. Pappas, C. J. Taylor
03/2002–02/2004.
 57. *Design, Implementation, and Validation of Embedded Software*
DARPA Model Integration of Embedded Software (MoBIES) Program.
PI: Insup Lee; co-PIs: Rajeev Alur, George J. Pappas, Vijay Kumar.
07/2000–12/2003.
 58. *Enabling Technologies for Distributed Mission Computing*
Boeing Corporation.
Insup Lee, George J. Pappas, Oleg Sokolsky.
1 year.
 59. *Control System for Teams of Autonomous Agents*
DARPA MICA Program, Subcontract to Honeywell Laboratories.
PI: George J. Pappas.
10/2001–06/2003.
 60. *Modeling and Analysis of Biological and Information Networks*
National Science Foundation.
PI: H. Rubin; co-PIs: R. Alur, M.D. Gouliau, V. Kumar, G. J. Pappas.
02/2002–01/2003.
 61. *NEPHEST*
Lockheed Martin.
PI: Vijay Kumar; co-PIs: Rajeev Alur, George J. Pappas.
02/2002–01/2003.
 62. *Architectures for Future Avionic Systems*
University of Pennsylvania Research Foundation.
PI: George J. Pappas.
07/2000–06/2001.
 63. *Optimal Real-Time Mode Switching for Hybrid Systems*
DARPA JFACC Program, Subcontract to Honeywell Laboratories.
PI: George J. Pappas.
10/1999–05/2001.