# Alessandro Pinto | Curriculum Vitae

apinto@berkeley.edu • https://alessandro-pinto.github.io/
in alessandro-pinto • PMwlwE0AAAAJ

## Research Interests

Rigorous systems engineering; design methodologies for high-assurance autonomous systems; architectures, analysis, and synthesis.

## Education

**University of California, Berkeley** — **Berkeley, CA**
*Electrical Engineering and Computer Sciences, Ph.D.* — *2008*
"A Platform-Based Approach to Communication Synthesis for Embedded-Systems"

**University of California, Berkeley** — **Berkeley, CA**
*Electrical Engineering and Computer Sciences, M.S.* — *2003*
"Synthesis of On-chip Communication Networks"

**University of Rome "La Sapienza"** — **Rome, Italy**
*Electrical Engineering, Laurea, Summa Cum Laude* — *1999*
"Design and Implementation of digital receivers for 2/4/8PSK - 16/32/64QAM Trellis-Coded Signals"

## Professional and Academic Positions

**NASA Jet Propulsion Laboratory, California Institute of Technology** — **Pasadena, CA**
*Autonomy Assurance Lead* — *2022–present*
Development of processes, methods, and tools to engineer dependable autonomous systems for space exploration.

**University of California, Santa Cruz** — **Santa Cruz, CA**
*Associate Adjunct Professor of Electrical and Computer Engineering* — *2022–present*
Research on formal methods for the analysis of cyber-physical systems.

**Lockheed Martin Corporation** — **Cherry Hill, NJ**
*Consultant* — *2023 – present*
Compositional methods for the analysis of defense systems.

**Raytheon Technologies Research Center** — **Berkeley, CA**
*Technical Fellow, Embedded Autonomous Systems* — *2018–2022*
Definition of multi-year research and development roadmaps. Technical oversight of research projects. Transition of technologies from research to product. Mentoring and developing talent.

**United Technologies Research Center** — **Berkeley, CA**
*Associate Director, Research, Autonomous and Intelligent Systems* — *2014–2017*
Development of technical roadmaps for knowledge acquisition and representation, reasoning methods, and architectural design of distributed autonomous and intelligent systems.
Transition of technology to business units. Proposal writing and project execution.

**United Technologies Research Center, Berkeley, CA** — **Berkeley, CA**
*Staff Engineer, Autonomous and Intelligent Systems & Design Methods* — *2008–2014*
Development of tools for system design and verification, and on-line reasoning and decision-making.
Proposal writing, technical project execution, software development and delivery.

**Ericsson Lab Italy** — **Rome, Italy**
*Consultant* — *1999-2001*
Implementation of system-level models of wireless communication systems.
Design of system-on-chips including co-simulation of hardware and firmware, testing, and validation.

## Recognition

**Frontiers of Engineering Alumnus**
*National Academy of Engineering* — *2019*
One of 116 selected emerging engineering leaders across the US from industry, academia, and national laboratories.

**Technical Excellence Award**
*United Technologies Research Center* *2017*
Given to one member of the research staff each year in recognition of significant technical contribution.

**Outstanding Achievement Award**
*United Technologies Corporation* *2015*
Given to one engineering team each year; recognition for significant contribution to autonomous vertical flight.

## Past and Present Projects

**PAAS: Proactive Assurance of Autonomous Systems** **Principal Investigator**
*NASA Jet Propulsion Laboratory, California Institute of Technology* *2024–*
Development of an engineering lifecycle approach to assured autonomous systems for space applications.

**Safe Aviation Autonomy with Learning-enabled Components in the Loop** **Co-Principal Investigator**
*NASA University Leadership Initiative* *2020–2022*
*(In collaboration with MIT, Georgia Tech, Stanford (Prime), MIT Lincoln Laboratory, University of New Mexico, Hampton University, UC Berkeley.)*
Development of compositional analysis methods for autonomous systems.

**Hybrid Efficient Reasoning Method for Explainable and Scalable formal methods** **Principal Investigator**
*DARPA I2O "Cyber-Assured Systems Engineering (CASE)"* *2018–2022*
*(In collaboration with University of Iowa and Stanford University.)*
Development of formal modeling and analysis tools for cyber-systems and their security properties.

**Autonomous Cargo Handling System for the 777 Freighter** **Principal Investigator**
*Collins Aerospace* *2016–2019*
Development of perception and control architectures and algorithms for introducing intelligence and automation in current cargo handling systems.

**Autonomous Crew Enhancement System** **Co-Principal Investigator**
*DARPA TTO "Aircrew Labor In-Cockpit Automation System (ALIAS)"* *2015–2018*
*(In collaboration with Sikorsky Aircraft Corporation)* Development of a system to automate aviation tasks and reduce aircrew workload.
Development of knowledge modeling and verification tools for the UH-60 knowledge base.

**Modeling and Verification of Human-Machine Systems** **Principal Investigator**
*Office of Naval Research* *2015 – 2019*
Development of models and automated analysis methods for systems featuring humans and autonomous systems collaborations; application to rotary-wing and underwater missions.

**Contract-Based Development and Deployment** **Principal Investigator**
*DARPA STO "Communication in Contested Environments (C2E)"* *2014–2017*
Development of a new design system based on component contracts applied to software-defined radios.

**Architectures and Algorithms for Autonomous Systems** **Principal Investigator**
*United Technologies Research Center* *2011–2013*
Development of an architecture for autonomous systems; development of planning algorithms with application to helicopter missions.

**Complex System Design and Analysis** **Co-Principal Investigator**
*DARPA TTO "Adaptive Vehicle Make"* *2010–2011*
Development of tools for model creation, design space exploration, and evaluation of complexity metrics applied to multi-mission Unmanned Aerial Vehicles.

**Stochastic Analysis and Design of Systems** **Principal Investigator**
*DARPA TTO* *2010–2011*
Development of a software library for the simulation and verification of Discrete Time Stochastic Hybrid Systems.

## Student Mentorship Experience

- Garrett Schueller. PhD Student at UT Austin. Strategic University Research Partnerships (SURP) recipient, 2024 –
- Qi Heng Ho. PhD Student at UC Boulder. Strategic University Research Partnerships (SURP) recipient, 2024 –
- Abhishek Chavan. UC Santa Cruz. MSc in Computer Science and Engineering, 2024 –
- Gowrav Bukkapattana Gururaj. UC Santa Cruz. MSc in Electrical and Computer Engineering, 2024 –
- Albert Lin. PhD Student at University of Southern California (USC). NASA Space Technology Graduate Research Opportunity (NSTGRO) recipient, 2023–2025

- Navin Vijey Raj Jeyaselvan, Yinu Guo, Sameer Bhuvaji, Jeffrey Tsang. UC Berkeley. MEng Capstone Project, 2023–2024
- Nikhil Naik. PhD Student at USC. Summer internship at NASA JPL, 2023
- Paul Meng. PhD Student at U Iowa. Summer internship at the United Technologies Research Center, 2016
- Mohak Bhardwaj, Shivam Gautam, Dorothy Kirlew, Pranav Maheshwari, Richa Varma. Carnegie Mellon University. MSc in Robotic Systems Development, 2015 – 2016
- Tianyi LIANG. PhD Student at U Iowa. Summer internship at the United Technologies Research Center, 2013
- Lianpeng Guo. PhD Student at UC Berkeley. Summer internship at the United Technologies Research Center, 2012

## Teaching Experience

- Model-Based Engineering: State-of-the-Art, Gaps, and Needs
  *Invited Lecture, EE149/249, University of California, Berkeley, 2021*
- DARPA Proposal Writing
  *Internal 1-day class at United Technologies Research Center, 2019*
- Embedded System Design
  *Lecturer, one-semester class at the undergraduate level, University of Udine, Italy, Fall 2006*
- Introduction to Microelectronic Circuits – EE40
  *Lecturer, University of California, Berkeley, Summer 2004*
- Embedded System Design – EE249
  *Teaching Assistant, University of California, Berkeley, 2004*
- Embedded System Design – EE249
  *Teaching Assistant, University of California, Berkeley, 2003*

## Professional Services

**Academic**

- Selection committee member, Cyber-Physical Research Center Best Thesis Award, UC Santa Cruz, 2024
- Selection committee member, Cyber-Physical Research Center Best Thesis Award, UC Santa Cruz, 2023
- PhD Advancement committee member, Paul Wintz, UC Santa Cruz, 2023
- Selection committee member, Cyber-Physical Research Center Best Thesis Award, UC Santa Cruz, 2022
- Selection committee member, SIGBED Paul Caspi Memorial Dissertation Award, 2021 – 2022

**Chair/Organizer**

- *Conference Co-Chair*, NASA Formal Methods Symposium (NFM 2026)
- *Conference Co-Chair*, Engineering Reliable Autonomous Systems (ERAS 2025)
- *Program Co-Chair*, IEEE Space Mission Challenges for Information Technology (SMC-IT 2024)
- *General Chair*, IEEE Space Mission Challenges for Information Technology (SMC-IT 2023)
- *Workshop Co-Chair*, Design Automation for CPS and IoT (DESTION 2022), Co-located with IEEE/ACM CPS-IoT WEEK 2022
- *Program Co-Chair*, Design Automation for CPS and IoT (DESTION 2021), Co-located with IEEE/ACM CPS-IoT WEEK 2021
- *Organizer*, Accelerating AI for Embedded Autonomy Workshop, September 2020, Co-located with the Embedded Systems Week 2020
- *Organizer*, Accelerating AI for Embedded Autonomy Workshop, October 2019, Co-located with the Embedded Systems Week, 2019
- *Co-Chair*, Numerical Software Verification Workshop, 2018
- *Session Chair*, Future of IC Reliability, 49th Design Automation Conference, 2012
- *Tutorials Chair*, Embedded Systems Week 2013
- *Moderator*, Performance and Power Issues in Embedded System-Level Design, International Conference on Computer-Aided Design, 2009

**Program Committees**

- Engineering Reliable Autonomous Systems 2026 (ERAS 2026)

- 6th International Workshop On Design Automation For CPS and IoT (DESTION 2024)
- 60th Design Automation Conference (DAC), Design, Verification, and Validation Track, 2023
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2023)
- 59th Design Automation Conference (DAC), Autonomous Systems Track, 2022
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2022)
- Design Automation and Test In Europe (DATE), Topic E3 : Machine Learning Solutions for Embedded and Cyber-Physical Systems, 2022
- 28th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2022
- 27th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), 2021
- Design Automation and Test In Europe (DATE), Topic E3 : Machine Learning Solutions for Embedded and Cyber-Physical Systems, 2021
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2021)
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2020)
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2019)
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2018)
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2017)
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2016)
- 24th International Joint Conference on Artificial Intelligence (IJCAI) 2015
- International Workshop on Applied Verification for Continuous and Hybrid Systems (ARCH 2015)
- Modeling in Human-Machine Systems: Challenges for Formal Verification, AAAI Symposium, 2014
- IEEE International Symposium on Industrial Embedded Systems (SIES), 2013
- IEEE International Symposium on Industrial Embedded Systems (SIES), 2012
- IEEE International Symposium on Industrial Embedded Systems (SIES), 2011
- IEEE International Symposium on Industrial Embedded Systems (SIES), 2010
- International Conference on Embedded Software (EMSOFT), 2010
- 47th Design Automation Conference, 2010
- 46th Design Automation Conference, 2009
- 5th Workshop on Synchronous Languages, Applications, and Programming (SLAP), 2006

**Others**

- *Associate Editor*, IEEE Transactions on Automation Science and Engineering, 2016-2019

## Publications


[1] Alessandro Pinto, Caleb Wagner, Klaus Havelund, and Nicolas Rouquette. An engineering life-cycle assurance process for autonomous space systems. In *IEEE Aerospace Conference*, 2026.

[2] Albert Lin, Alessandro Pinto, and Somil Bansal. Robust verification of controllers under state uncertainty via hamilton-jacobi reachability analysis. In *Submitted*, 2026.

[3] Garrett R Schueller, John-Paul Clarke, and Alessandro Pinto. Analyzing lunar imagery using computer vision models to improve path planning. In *AIAA AVIATION FORUM AND ASCEND 2025*, page 4028, 2025.

[4] Nikhil Vijay Naik, Alessandro Pinto, and Pierluigi Nuzzo. Contract embeddings for layered control architectures. *ACM Trans. Embed. Comput. Syst.*, 24(5s), September 2025.

[5] Nikhil Vijay Naik, Alessandro Pinto, and Pierluigi Nuzzo. Contract-Based Hierarchical Modeling and Traceability of Heterogeneous Requirements. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 2024. Publisher: IEEE.

[6] Charlott Vallon, Alessandro Pinto, Bartolomeo Stellato, and Francesco Borrelli. Learning Hierarchical Control For Constrained Dynamic Task Assignment. In *2024 63rd IEEE Conference on Decision and Control (CDC)*, 2024.

[7] Charlott Vallon, Mark Pustilnik, Alessandro Pinto, and Francesco Borrelli. Learning Hierarchical Control Systems

for Autonomous Systems with Energy Constraints. In *2024 63rd IEEE Conference on Decision and Control (CDC)*, 2024.

[8] Timothy E Wang and Alessandro Pinto. Survey of human models for verification of human-machine systems. *arXived*, 2023.

[9] Zamira Daw, Chanwook Oh, Matthew Low, Timothy Wang, Isaac Amundson, Alessandro Pinto, Massimiliano Chiodo, Guoqiang Wang, Saqib Hasan, Ryan Melville, and others. Aace: Automated assurance case environment for aerospace certification. In *2023 IEEE/AIAA 42nd Digital Avionics Systems Conference (DASC)*, pages 1–10. IEEE, 2023.

[10] Timothy E Wang, Chanwook Oh, Matthew Low, Isaac Amundson, Zamira Daw, Alessandro Pinto, Massimiliano L Chiodo, Guoqiang Wang, Saqib Hasan, Ryan Melville, and others. Computer-aided generation of assurance cases. In *International Conference on Computer Safety, Reliability, and Security*, pages 135–148. Springer, 2023.

[11] Nicolas Rouquette, Inigo Incer, and Alessandro Pinto. Early Design Exploration of Space System Scenarios Using Assume-Guarantee Contracts. In *2023 IEEE 9th International Conference on Space Mission Challenges for Information Technology (SMC-IT)*, pages 15–24. IEEE, 2023.

[12] Martin S Feather and Alessandro Pinto. Assurance for Autonomy–JPL's past research, lessons learned, and future directions. In *2023 IEEE International Conference on Assured Autonomy (ICAA)*, pages 97–105. IEEE, 2023.

[13] Alessandro Pinto, Anthony Corso, and Edward Schmerling. Leveraging Compositional Methods for Modeling and Verification of an Autonomous Taxi System. In *2023 IEEE International Conference on Assured Autonomy (ICAA)*, pages 34–43. IEEE, 2023.

[14] Timothy E Wang, Zamira Daw, Pierluigi Nuzzo, and Alessandro Pinto. Hierarchical Contract-Based Synthesis for Assurance Cases. In *NASA Formal Methods Symposium*, pages 175–192. Springer, 2022.

[15] Alessandro Pinto. Analysis and Design of Uncertain Cyber-Physical Systems. In *Computation-Aware Algorithmic Design for Cyber-Physical Systems*, pages 25–53. Springer, 2023.

[16] Alessandro Pinto. Modeling methodology for autonomous cyber-physical systems. In *2022 2nd International Workshop on Computation-Aware Algorithmic Design for Cyber-Physical Systems (CAADCPS)*, pages 1–2. IEEE, 2022.

[17] Alessandro Pinto. Requirement Specification, Analysis and Verification for Autonomous Systems. In *2021 58th ACM/IEEE Design Automation Conference (DAC)*, pages 1315–1318. IEEE, 2021.

[18] Amit Bhatia and Alessandro Pinto. Automated Construction of Knowledge-Bases for Safety Critical Applications: Challenges and Opportunities. In *AAAI Spring Symposium: Combining Machine Learning with Knowledge Engineering*, 2021.

[19] Alessandro Pinto. An open and modular architecture for autonomous and intelligent systems. In *2019 IEEE International Conference on Embedded Software and Systems (ICESS)*, pages 1–8. IEEE, 2019.

[20] Susmit Jha, Tuhin Sahai, Vasumathi Raman, Alessandro Pinto, and Michael Francis. Explaining AI decisions using efficient methods for learning sparse Boolean formulae. *Journal of Automated Reasoning*, 63(4):1055–1075, 2019. Publisher: Springer.

[21] Felice Balarin, Massimiliano D'Angelo, Abhijit Davare, Douglas Densmore, Trevor Meyerowitz, Roberto Passerone, Alessandro Pinto, et al. Platform-based design and frameworks: Metropolis andmetro ii. In *Model-Based Design for Embedded Systems*, pages 283–346. CRC Press, 2018.

[22] Susmit Jha, Vasumathi Raman, Alessandro Pinto, Tuhin Sahai, and Michael Francis. On learning sparse Boolean formulae for explaining AI decisions. In *NASA Formal Methods Symposium*, pages 99–114. Springer, 2017.

[23] Alessandro Pinto and Alberto L Sangiovanni Vincentelli. CSL4P: A contract specification language for platforms. *Systems Engineering*, 20(3):220–234, 2017. Publisher: Wiley Online Library.

[24] Siddharth Srivastava, Stuart Russell, and Alessandro Pinto. Metaphysics of planning domain descriptions. In *2015 AAAI Fall Symposium Series*, 2015.

[25] Xuchu Dennis Ding, Brendan Englot, Alessandro Pinto, Alberto Speranzon, and Amit Surana. Hierarchical multi-objective planning: From mission specifications to contingency management. In *2014 IEEE international conference on robotics and automation (ICRA)*, pages 3735–3742. IEEE, 2014.

[26] Alessandro Pinto and George A Mathew. Computing Probability Distributions over a Hybrid State Space: Case Study and Practical Limitations. 2014.

[27] Songyan Xu, Ratnesh Kumar, and Alessandro Pinto. Correct-by-construction and optimal synthesis of beacon-enabled ZigBee network. *IEEE Transactions on Automation Science and Engineering*, 10(1):137–144, 2012. Publisher: IEEE.

[28] Liangpeng Guo, Alberto Sangiovanni Vincentelli, and Alessandro Pinto. A complexity metric for concurrent finite state machine based embedded software. In *2013 8th IEEE International Symposium on Industrial Embedded Systems (SIES)*, pages 189–195. IEEE, 2013.

[29] Xu Chu Ding, Alessandro Pinto, and Amit Surana. Strategic planning under uncertainties via constrained Markov decision processes. In *2013 IEEE International Conference on Robotics and Automation*, pages 4568–4575. IEEE, 2013.

[30] I Cherepinsky and A Pinto. Stringent safety design and verification methods for VTOL unmanned aerial vehicles. In *Proceedings of the American Helicopter Society 68th Annual Forum, Fort Worth, TX*, 2012.

[31] A Pinto. Methods and tools to enable the design and verification of intelligent systems. *AIAA Infotech at Aerospace*, 2012.

[32] BT Murray, A Pinto, R Skelding, O De Weck, H Zhu, S Nair, N Shougarian, K Sinha, S Bopardikar, and L Zeidner. Meta ii complex systems design and analysis (coda). *DTIC Document*, 2011.

[33] Francesco Leonardi, Alessandro Pinto, and Luca P Carloni. Synthesis of distributed execution platforms for cyber-physical systems with applications to high-performance buildings. In *2011 IEEE/ACM Second International Conference on Cyber-Physical Systems*, pages 215–224. IEEE, 2011.

[34] George A Mathew and Alessandro Pinto. Stochastic analysis and design of systems. Technical report, UNITED TECHNOLOGIES CORP HARTFORD CT, 2011.

[35] Andrzej Banaszuk, Vladimir A Fonoberov, Thomas A Frewen, Marin Kobilarov, George Mathew, Igor Mezic, Alessandro Pinto, Tuhin Sahai, Harshad Sane, Alberto Speranzon, and others. Scalable approach to uncertainty quantification and robust design of interconnected dynamical systems. *Annual Reviews in Control*, 35(1):77–98, 2011. Publisher: Elsevier.

[36] Igor Cizelj, Xu Chu Dennis Ding, Morteza Lahijanian, Alessandro Pinto, and Calin Belta. Probabilistically safe vehicle control in a hostile environment. *IFAC Proceedings Volumes*, 44(1):11803–11808, 2011. Publisher: Elsevier.

[37] Mehdi Maasoumy, Alessandro Pinto, and Alberto Sangiovanni-Vincentelli. Model-based hierarchical optimal control design for HVAC systems. In *Dynamic Systems and Control Conference*, volume 54754, pages 271–278, 2011.

[38] M Mozumdar, Alberto Puggelli, Alessandro Pinto, Luciano Lavagno, and Alberto L Sangiovanni-Vincentelli. A hierarchical wireless network architecture for building automation and control systems. In *Proceedings of the 7th International Conference on Networking and Services (ICNS)*, 2011.

[39] George Mathew and Alessandro Pinto. Optimal design of a class of hybrid systems with uncertain parameters. In *2011 50th IEEE Conference on Decision and Control and European Control Conference*, pages 539–544. IEEE, 2011.

[40] Luca P Carloni, Andrew B Kahng, Swamy V Muddu, Alessandro Pinto, Kambiz Samadi, and Puneet Sharma. Accurate predictive interconnect modeling for system-level design. *IEEE transactions on very large scale integration (VLSI) systems*, 18(4):679–684, 2009. Publisher: IEEE.

[41] Alessandro Pinto, Sudha Krishnamurthy, and Suresh Kannan. A model-based end-to-end toolchain for the probabilistic analysis of complex systems. In *2010 IEEE International Conference on Automation Science and Engineering*, pages 994–1000. IEEE, 2010.

[42] Yang Yang, Alessandro Pinto, Alberto Sangiovanni-Vincentelli, and Qi Zhu. A design flow for building automation and control systems. In *2010 31st IEEE Real-Time Systems Symposium*, pages 105–116. IEEE, 2010.

[43] George Mathew and Alessandro Pinto. Markov modeling of stochastic hybrid systems. In *2010 48th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pages 1707–1713. IEEE, 2010.

[44] Alessandro Pinto and Sudha Krishnamurthy. Developing design tools for uncertain systems in an industrial setting. In *2010 48th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pages 1714–1721. IEEE, 2010.

[45] Sandor Becz, Alessandro Pinto, Lawrence Zeidner, Ritest Khire, Hayden Reeve, and Andrzej Banaszuk. Design system for managing complexity in aerospace systems. In *10th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference*, page 9223, 2010.

[46] Alessandro Pinto, Sandor Becz, and Hayden Reeve. Correct-by-construction design of aircraft electric power systems. In *10th AIAA Aviation Technology, Integration, and Operations (ATIO) Conference*, page 9263, 2010.

[47] Amit Surana and Alessandro Pinto. Analysis of Stochastic Automata Networks using copula functions. In *2010 48th Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pages 1699–1706. IEEE, 2010.

[48] Alessandro Pinto, Ratnesh Kumar, and Songyan Xu. Synthesis of wireless time-triggered embedded networks for networked control systems. In *2009 IEEE International Conference on Automation Science and Engineering*, pages 397–402. IEEE, 2009.

[49] Francesco Leonardi, Alessandro Pinto, and Luca P Carloni. A case study in distributed deployment of embedded software for camera networks. In *2009 Design, Automation & Test in Europe Conference & Exhibition*, pages 1006–1011. IEEE, 2009.

[50] Alessandro Pinto, Luca P Carloni, and Alberto L Sangiovanni-Vincentelli. A methodology for constraint-driven synthesis of on-chip communications. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 28(3):364–377, 2009. Publisher: IEEE.

[51] Alessandro Pinto, Massimiliano D'Angelo, Carlo Fischione, Eelco Scholte, and Alberto Sangiovanni-Vincentelli. Synthesis of embedded networks for building automation and control. In *2008 American Control Conference*, pages 920–925. IEEE, 2008.

[52] M D'Angelo, Carlo Fischione, Matteo Butussi, Alessandro Pinto, and Al Sangiovanni-Vincentelli. Outage-based rate maximization in cdma wireless networks. In *IEEE GLOBECOM 2008-2008 IEEE Global Telecommunications Conference*, pages 1–6. IEEE, 2008.

[53] Luca Carloni, Andrew B Kahng, Swamy Muddu, Alessandro Pinto, Kambiz Samadi, and Puneet Sharma. Interconnect modeling for improved system-level design optimization. In *2008 Asia and South Pacific Design Automation Conference*, pages 258–264. IEEE, 2008.

[54] Alessandro Pinto, Luca P Carloni, and Alberto Sangiovanni-Vincentelli. COSI: A framework for the design of interconnection networks. *IEEE Design & Test of Computers*, 25(5):402–415, 2008. Publisher: IEEE.

[55] Abhijit Davare, Douglas Densmore, Trevor Meyerowitz, Alessandro Pinto, Alberto Sangiovanni-Vincentelli, Guang Yang, Haibo Zeng, and Qi Zhu. A next-generation design framework for platform-based design. In *Conference on using hardware design and verification languages (DVCon)*, volume 152, 2007.

[56] Alessandro Pinto, Luca P Carloni, and Alberto L Sangiovanni-Vincentelli. A communication synthesis infrastructure for heterogeneous networked control systems and its application to building automation and control. In *Proceedings of the 7th ACM & IEEE international conference on Embedded software*, pages 21–29, 2007.

[57] Alessandro Pinto, Luca P Carloni, Roberto Passerone, and Alberto Sangiovanni-Vincentelli. Interchange semantics for hybrid system models. *Proc. of 5th MATHMOD*, 2006.

[58] Alessandro Pinto, Luca P Carloni, Roberto Passerone, and Alberto Sangiovanni-Vincentelli. Interchange format for hybrid systems: Abstract semantics. In *International Workshop on Hybrid Systems: Computation and Control*, pages 491–506. Springer, 2006.

[59] Luca P Carloni, Roberto Passerone, Alessandro Pinto, Alberto L Sangiovanni-Vincentelli, and others. Languages and tools for hybrid systems design. *Foundations and Trends® in Electronic Design Automation*, 1(1–2):1–193, 2006. Publisher: Now Publishers, Inc.

[60] Alessandro Pinto, Alvise Bonivento, Allberto L Sangiovanni-Vincentelli, Roberto Passerone, and Marco Sgroi. System level design paradigms: Platform-based design and communication synthesis. *ACM Transactions on Design Automation of Electronic Systems (TODAES)*, 11(3):537–563, 2006. Publisher: ACM New York, NY, USA.

[61] Felice Balarin, Harry Hsieh, Luciano Lavagno, Claudio Passerone, Alessandro Pinto, Alberto Sangiovanni-Vincentelli, Yosinori Watanabe, and Guang Yang. Metropolis: A design environment for heterogeneous systems. In *Multiprocessor Systems-on-Chips*, pages 465–496. Elsevier, 2005.

[62] Jonathan Sprinkle, Aaron D Ames, Alessandro Pinto, Haiyang Zheng, and S Shankar Sastry. On the partitioning of syntax and semantics for hybrid systems tools. In *Proceedings of the 44th IEEE Conference on Decision and Control*, pages 4694–4699. IEEE, 2005.

[63] Alessandro Pinto, Alberto L Sangiovanni-Vincentelli, Luca P Carloni, and Roberto Passerone. Interchange formats for hybrid systems: Review and proposal. In *International Workshop on Hybrid Systems: Computation and Control*, pages 526–541. Springer, 2005.

[64] Alberto Luigi Sangiovanni-Vincentelli and Alessandro Pinto. Embedded system education: a new paradigm for engineering schools? *ACM SIGBED Review*, 2(4):5–14, 2005. Publisher: ACM New York, NY, USA.

[65] Felice Balarin, Roberto Passerone, Alessandro Pinto, and Alberto L Sangiovanni-Vincentelli. A formal approach to system level design: Metamodels and unified design environments. In *Proceedings. Second ACM and IEEE International Conference on Formal Methods and Models for Co-Design, 2005. MEMOCODE'05.*, pages 155–163. IEEE, 2005.

[66] Alberto L Sangiovanni-Vincentelli and Alessandro Pinto. An overview of embedded system design education at Berkeley. *ACM Transactions on Embedded Computing Systems (TECS)*, 4(3):472–499, 2005. Publisher: ACM New York, NY, USA.

[67] Alessandro Pinto, Luca P Carloni, and Alberto L Sangiovanni-Vincentelli. Efficient synthesis of networks on chip. In *Proceedings 21st International Conference on Computer Design*, pages 146–150. IEEE, 2003.

[68] Alessandro Pinto, Luca P Carloni, and Alberto L Sangiovanni-Vincentelli. Constraint-driven communication synthesis. In *Proceedings of the 39th annual Design Automation Conference*, pages 783–788, 2002.

## Patents

[1] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Distributed control of autonomous cargo handling systems, U.S. Patent 12 084 201, Sep. 10, 2024.

[2] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Olusegun T. Oshin. Systems and methods for operating multiple-level autonomous cargo handling systems, U.S. Patent 12 085 914, Sept. 10, 2024.

[3] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma. Systems and methods for safely operating autonomous cargo handling systems. U.S. Patent 12 060 165, Aug. 13, 2024.

[4] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Olusegun T. Oshin. Systems and methods for run-time self-assessment of cargo handling systems, U.S. Patent 11 958 628, Apr. 16, 2024.

[5] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Xiaobin Zhang, Binu M. Nair, Autonomous system for air cargo end-to-end operations, U.S. Patent 10 994 865, Dec. 5, 2023.

[6] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Xiaobin Zhang, Binu M. Nair, Self Calibrating Multi-Sensor Cargo Handling System and Method, U.S. Patent 11 203 431, Dec. 21, 2021.

[7] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Binu M. Nair, Xiaobin Zhang, Aaron J Roberts, and Scott Harms, On-board unit load device weight estimation, U.S. Patent 10 782 179, Sep. 22, 2020.

[8] Amit Bhatia, Zamira Daw Perez, Alessandro Pinto, Julian C. Ryde, Autonomous cargo handling system and method, U.S. Patent 10 005 564, Jun. 26, 2018.

[9] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Olusegun T. Oshin. Real-time communication link with a cargo handling system. U.S. Patent Application 20 210 319 683, Oct. 14, 2021.

[10] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Olusegun T. Oshin. Real-time tracking of cargo loads, U.S. Patent Application 20 210 319 397, Oct. 14, 2021.

[11] Zamira A. Daw Perez, Alessandro Pinto, Richa Varma, Xiaobin Zhang, Binu M. Nair. Multi-robot system for cargo handling. U.S. Patent Application 20 200 122 834, Apr. 23, 2020.

## Invited Talks and Panels

[1] The Second IEEE International Workshop on Assured Autonomy, Artificial Intelligence and Machine Learning (WAAM)
*Panelist, Designing Autonomous/AI/ML Systems for Assurance, 2023*

[2] Architectures and Machine Learning Models for High Assurance Autonomous Systems.
*Tutorial, Design Automation Conference (DAC), 2023*

[3] Resolving Barriers to Infusion: Fielding Dependable Autonomous Space Systems.
*Invited panelist, ASCEND Conference, 2023*

[4] Workshop on the Verification of Autonomous Systems (VAS).
*Invited panelist, International Conference on Robotics and Automation (ICRA), 2022*

[5] Model-Based Engineering.
*Seminar speaker, University of California, Santa Cruz, Seminar Series, 2022*

[6] Compositional Specification and Verification of Autonomous Systems.
*Seminar Speaker, Safe Aviation Autonomy Research Seminar, Stanford University, 2021*

[7] Assured Autonomy: Need for Engineering Methods.
*Invited Talk, Workshop on Assured CPS Autonomy for 3D Urban Transportation: Drones, Flying Cars and Beyond, 2021*

[8] Design of Autonomous Systems: Engineering, Science, or Art?.
*Invited panelist, Design Automation Conference, 2020*

[9] Embedded Autonomy.
*Invited Seminar, think Lab Distinguished Speaker Series, IBM Research – Almaden, 2019*

[10] Planning Via Constrained Markov Decision Processes.
*Seminar speaker, Center for Information and Systems Engineering (CISE), Boston University, 2019*

[11] Embedded AI.
*Invited Talk, Arizona State University, 2018*

[12] Stochastic Analysis of Cyber-Physical Systems.
*Invited Talk, Computation-aware Algorithmic Design for Cyber-Physical Systems Workshop, Conference on Decision and Control, 2018*

[13] Knowledge-based Architectures.
*Invited talk, Workshop on Complex Collaborative Systems, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2017*

[14] Demand for Unmanned Symposium.
*Invited Panelist, The Verification and Validation of Intelligent Machines, 2017*

[15] Workshop on Verification and Control of Cyber-physical Systems: Theory and Applications.
*Invited Talk, 55th Conference on Decision and Control, 2016*

[16] Verification of Autonomous Systems.
*Invited Talk, 31st Annual National Test and Evaluation Conference, 2016*

[17] Trans-Atlantic Modeling and Simulation for Cyber-Physical Systems,
*Invited US industry representative, Georgia Institute of Technology, 2015*

[18] Application of Constrained Decision Processes to Mission Planning.
*Invited Talk,"Constrained decision-making in robotics: models, algorithms, and applications" workshop, Robotic Science and Systems, 2014*

[19] A short list of skills needed to build autonomous systems.
*Invited Talk, Workshop on Cyber-Physical System Education, Embedded Systems Week, 2014*

[20] Modeling Complex Industrial Systems.
*Panel Moderator, Embedded Systems Week, 2013*

[21] Code Generation Infrastructure for a Multi-Modal Synchronous MoC
*Invited Talk, Workshop on Software Synthesis, Embedded Systems Week, 2013*

[22] On the development of tools for system design.
*Invited Seminar, Model-Based Systems Engineering Colloquium, Institute for Systems Research, University of Maryland, 2011*

[23] Model-Based Design of Uncertain Systems: Why and How.
*Invited Seminar, Center for Control, Dynamical Systems, and Computation, UC Santa Barbara, 2011*

[24] Model-Based Tool Chains for the Probabilistic Analysis of Complex Systems
*Invited Seminar, Center for Information and Systems Engineering, Boston University, 2010*