

Calin A. Belta

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RESEARCH INTERESTS

Control, Formal Methods, Machine Learning, Robotics, Systems Biology

EDUCATION

University of Pennsylvania, Philadelphia, PA

Ph.D. Mechanical Engineering, Aug 2003

M.S. Mechanical Engineering, May 2001

Thesis: "Geometric methods for multi-robot planning and control"

Louisiana State University, Baton Rouge, LA

M.S. Electrical Engineering, May 1999

Thesis: "Stability Analysis of Axial Flow Compressors"

Universitatea Tehnica "Gh.Asachi", Iasi, Romania

M.S. Control, July 1996

Thesis: "Computationally Efficient LQ Optimal Control"

B.S., M.S. Automatic Control and Computer Science, July 1995

Thesis: "LQ Optimal Control"

PROFESSIONAL EXPERIENCE

University of Maryland, College Park, MD

Brendan Iribe Endowed Professor of Electrical and Computer Engineering and Computer Science,
January 2024 -

Motional, Boston, MA

Research Consultant, Sept. 2019 – Dec. 2021

Boston University, Boston, MA

Tegan Family Distinguished Professor of Mechanical Eng., March 2016 – January 2024

Professor of Mechanical Eng., Systems Eng., Electrical and Computer Eng, and Bioinformatics, Feb.
2015 – January 2024

Director of the BU Robotics Lab, Aug. 2015 - January 2024

Associate Professor of Mechanical Eng., Systems Eng., Electrical and Computer Eng, and Bioinformatics,
Aug. 2011 – Feb. 2015

Assistant Professor, July 2005 – Aug. 2011

Singapore MIT Alliance for Research and Technology (SMART), Singapore
Research Fellow, June – July, 2014

Institut National de Recherche en Informatique et en Automatique (INRIA), Rocquencourt, France
Visiting Professor, Oct.-Nov. 2011

Massachusetts Institute of Technology, Cambridge, MA
Visiting Professor at the Singapore MIT Alliance for Research and Technology (SMART), Sept. 2011

Drexel University, Philadelphia, PA
Assistant Professor of Mechanical Engineering, Sept. 2003 – June 2005

GRASP Laboratory, Univ. of Pennsylvania, Philadelphia, PA
Graduate Research Fellow, Sept 1999-Sept 2003

Control Systems Laboratory, Louisiana State University, Baton Rouge, LA
Graduate Research Fellow, 1997-1999

Universitatea Tehnica "Gh.Asachi", Iasi, Romania
Junior Assistant Professor, 1995 - 1997

AWARDS & RECOGNITIONS

Keynote Speaker, IEEE International Conference on Control, Measurement and Instrumentation (CMI), Kolkata, India, 2021

Outstanding Student Paper Award (student: Wei Xiao), IEEE Conference on Decision and Control (CDC), 2020

Plenary Speaker, MIT LIDS Student Conference, Boston, 2019

Distinguished Lecturer of the IEEE Control System Society, January 1, 2019 - December 31, 2023

Keynote Speaker, Computational Modeling in Biology Network (COMBINE), Boston University, 2018

Keynote Speaker, International Workshop on the Verification and Validation of Autonomous Systems (VaVAS), University of Oxford, 2018

Keynote Speaker, IFAC Conference on Analysis and Design of Hybrid Systems (ADHS), University of Oxford 2018

Keynote Speaker, Working Formal Methods Symposium 2018, Alexandru Ioan Cuza University of Iasi, Romania, 2018

Finalist for Best Paper Award, 2018 ACM Hybrid Systems: Computation and Control (HSCC)

2017 IEEE Transactions on Control of Network Systems (TCNS) Outstanding Paper Award, 2017

2017 IEEE Transactions on Control of Network Systems (TCNS) Outstanding Paper Award

IEEE Fellow, class of 2017

Tegan Family Distinguished Faculty Fellow, Boston University, starting 2016

Best Student Paper Award Finalist, (student: Maria Svorenova), Hybrid Systems: Computation and Control (HSCC), Seattle, WA, 2015

Keynote Speaker, 21st International Symposium on Temporal Representation and Reasoning (TIME) 2014, Verona Italy, September, 2014

CISE First Prize, BU Engineering and Science Day, Boston, April 12, 2012

Keynote Speaker, 15th International Conference on Hybrid Systems: Computation and Control (HSCC) Beijing, April 17, 2012.

Best Student Paper Award, (student: Yushan Chen), 10th Int. Symp. on Distributed Autonomous Robotic Sys (DARS), Lausanne, Switzerland, 2010

AFOSR Young Investigator Award, 2008

NSF CAREER Award, 2005

Best Paper Award, Int. Conf. Systems Biology, Heidelberg, Germany, 2004

Best Paper Award Finalist, ASME DETC, Montreal, Canada, 2002

Best Student Paper Award Finalist, Int. Conf. on Robotics and Automation 2001, Seoul, Korea, 2001

University Fellowship, University of Pennsylvania, Philadelphia, PA, 1999

Fulbright Study Award, 1997

Valedictorian, Universitatea Tehnica Gh. Asachi, Iasi, Romania, 1995

Excellence Scholarship, Universitatea Tehnica Gh. Asachi, Iasi, Romania, 1990 - 1995

CURRENT PROJECTS

AFOSR MURI: “A synthetic biology programming language and foundational control theory with application to guided multicellular mammalian 3D shape shifters”, Role: PI of the BU team (lead MIT), \$2,000,000, 09/01/2023 – 08/30/2025

NSF GCR 2219101 “Collaborative Research: Micro-bio-genetics for Programmable Organoid Formation”, Role: PI of the BU team, \$900,000 (BU amount), \$3,600,000 overall amount, 10/01/2022 - 09/30/2027

NIH R01 EB030946: “Synthetic gene sensors and effectors to redirect organoid development”, Role: co-PI (MIT sub-contract), \$3,000,000 (overall amount), 05/01/2021 – 01/31/2025

NSF IIS-2024606: “NRI: FND: A Formal Methods Approach to Safe, Composable, and Distributed Reinforcement Learning for co-Robots”, Role: PI, \$548,065, 10/01/2020 - 09/30/2024

MIT / Lincoln Lab: “Inter- and Intra- Team Coordination”, Role: PI, \$400,000, 12/01/2018 – 09/30/2024

PAST PROJECTS

NSF OIA-2020983: “GCR: Collaborative Research: Fine-grain generation of multiscale patterns in programmable organoids using microrobots”, Role: PI (of the BU team), \$175,000, 09/01/2020 - 08/31/2022

NSF IIS-1723995: “S&AS: INT: COLLAB: Autonomy as a Service”, Role: PI of the BU team, overall amount: 1,000,000, BU amount: 235,000, 8/15/2017 - 7/31/2021

NSF CNS-1446607 CPS Frontier “Collaborative Research bioCPS for Engineering Living Cells”, Role: lead PI (collaboration with MIT and Penn), \$4,500,000, (BU part \$1,882,852), 05/01/2015 – 04/30/2021

NSF CBET-0939511: “Emergent Behaviors of Integrated Cellular Systems” (EBICS) - Science and Technology Center (lead: MIT); BU sub-award: “Quantification and Synthesis of Emergent Behaviors in Networks of Locally Interacting Entities” (funded at the level of \$100,000/year) 10/01/2014 – 09/30/2021

Schlumberger-Doll Research: “Autonomous Persistent Surveillance of Hydraulic Fracturing Sites”, Role: PI, \$50,000, 10/01/2018 – 09/30/2019

NSF NRI-1426907: “Formal Methods for Motion Planning and Control with Human-in-the-Loop”, Role: PI (single PI), \$488,644, 08/01/14 – 07/31/2019

NSF CMMI-1400167: “Combining Optimality and Correctness in Control Systems”, Role: PI (single PI), \$349,999, 08/01/2014 – 07/31/2019

Schlumberger-Doll Research: “Underwater Object Recognition and Localization for Control”, Role: PI, \$70,000, 04/01/2017 – 03/31/2018

NSF CPS- 1446151: Synergy: Collaborative Research: Efficient Traffic Management: A Formal Methods Approach, Role: PI (collaboration with UC Berkeley), \$301,547 (BU amount), 01/01/2015-12/31/2019

ONR N00014-14-1-0554: “Formal Methods for Learning, Monitoring, and Detection of Anomalous and Malicious Behaviors in Maritime Surveillance”, Role: PI (single PI), \$450,000, 6/1/2014 - 5/31/2017

ONR MURI 014-001-0303-5: “Utilizing Synthetic Biology to Create Programmable Micro-Bio-Robots”, Role: co-PI, expected overall 5-year amount: \$7,500,000, 07/30/2011 – 11/30/2016

ONR MURI N00014-09-1051: “Smart Adaptive Reliable Teams for Persistent Surveillance (SMARTS)” (subcontract from MIT), Role: PI of the BU team, overall 5-year amount: \$7,500,000, 5-year BU amount: \$1,446,000, 05/30/2009 – 05/01/2016

ONR MURI N00014-10-10952: “Animal Inspired Robust Flight with Outer and Inner Loop Strategies” (subcontract from U. Washington), Role: co-PI, expected overall 5-year amount: \$7,500,000, expected 5-year BU amount: \$3,127,730, 10/01/2010 – 09/31/2015

NSF CNS-1035588 “CPS: Medium: Collaborative Research: Efficient Control Synthesis and Learning in Distributed Cyber-Physical Systems”, Role: PI, overall 3-year amount: \$1,000,000, 3-year BU amount: \$400,000, 09/03/2010 – 08/31/2015

DENSO Corporation, Japan: “Formal Methods for Learning, Monitoring, and Mitigation of Anomalies in Automotive Systems”, Role: PI, \$70,000, 12/15/2014 – 07/01/2017

NSF EF 1137900: “Collaborative Research: The Dynamics of the Innate Immune System: A Study of the Toll-Like Receptor (TLR) Network”, Role: PI, \$142,512, 07/10/2011 – 06/10/2013

NSF CMMI 0928776: “A formal approach to the control of stochastic dynamical systems,” Role: co-PI, \$240,000, 08/05/09 -08/31/13

NSF CNS-0834260: “A formal approach to control of hybrid systems”, Role: PI (Single PI), \$300,000, 09/15/08 -08/31/13.

AFOSR DURIP FA9550- 11-1-0292: “Instrumentation to Support Research on Provably Safe and Animal-Inspired Flight”, Role: PI, \$250,000, 11/01/2012 – 09/01/2013

NSF IIS-0447721: “CAREER: Hierarchical abstractions for planning and control of robotic swarms”, Role: PI: (Single PI), \$400,000, 02/01/05 -01/31/11.

NSF IIS- 0924561: “REU Supplement for CAREER: Hierarchical abstractions for planning and control of robotic swarms”, Role: PI (Single PI), \$12,000, 05/01/2009 – 12/31/2009

AFOSR Young Investigator Award FA9550-09-1-0209: “Formal synthesis of control and communication strategies for teams of unmanned vehicles”, Role: PI (Single PI), \$300,000, 01/01/09 -12/31/12.

ARO W911NF-09-1-0088: “Specification languages and distributed control schemes for teams of unmanned vehicles”. Role: PI (single PI), \$229,101, 01/01/09 -12/31/12.

NIH R01 DE15989: “Role of Obesity in Infection”, Role: co-PI, \$569,676, 10/1/2009 - 09/30/2011

NSF IIS-0822845: “REU Supplement for CAREER: Hierarchical abstractions for planning and control of robotic swarms”, Role: PI (Single PI) , \$12,000, 05/01/2008 – 07/31/2008

NSF CNS-0410514: “Scalable algorithms for safety verification and reachability analysis of hybrid systems”, Role: PI, \$300,000, 09/01/04 -08/30/08.

NSF CCF-0432070: “Collaborative Research: Rational Design of Synthetic Gene Networks using Formal Analysis of Hybrid Systems”, Role: PI, \$275,000, 09/01/04 -08/30/07.

PA Dept of Health Research Formula Fund Grant: “Systems Biology Approach to the Understanding of Protein – Protein Interactions: Simulation, Control and Biological Validation”, Role: co-PI, \$50,000, 05/01/04 - 04/30/05.

PATENTS

US Patent App. 17/573,001 “Graph Exploration for Rulebook Trajectory Generation”, Anne Collin, Hsun-Hsien Chang, Radboud Duintjer Tebbens, Calin Belta, Amitai Bin-Nun, Noushin Mehdipour (pending)

US Patent no. 11681296 “Scenario-based behavior specification and validation”, June 20, 2023, Radboud Duintjer Tebbens, Anne Collin, Calin Belta, Emilio Frazzoli, Kostyantyn Slutskyy, Amitai Bin-Nun, Tichakorn Wongpiromsarn, Hsun-Hsien Chang

US Patent no. 11755015 “Scoring autonomous vehicle trajectories using reasonable crowd data”, September 12, 2023, Oscar Olof Beijbom, Bassam Helou, Radboud Duintjer Tebbens, Calin Belta, Anne Collin, Tichakorn Wongpiromsarn

PUBLICATIONS

Books

[B3] Wei Xiao, Christos G. Cassandras, and Calin Belta, Safe Autonomy with Control Barrier Functions: Theory and Applications, Springer, 2023, DOI: <https://doi.org/10.1007/978-3-031-27576-0>

[B2] Max H. Cohen, Calin Belta, Adaptive and Learning-based Control of Safety-Critical Systems, Springer, 2023, DOI: <https://doi.org/10.1007/978-3-031-29310-8>

[B1] Calin Belta, Boyan Yordanov, and Ebru Aydin Gol, Formal Methods for Discrete-Time Dynamical Systems, Springer, 2017, ISBN: 978-3-319-50762-0, <https://link.springer.com/book/10.1007/978-3-319-50763-7>

Journal Papers

[A85] Cai Mingyu, Erfan Aasi, Calin Belta, Cristian Ioan Vasile, Overcoming Exploration: Deep Reinforcement Learning for Continuous Control in Cluttered Environments from Temporal Logic Specifications, IEEE Robotics and Automation Letters, vol. 8, no. 4, pp. 2158-2165, 2023

[A84] Max Cohen, Calin Belta, Safe Exploration in Model-based Reinforcement Learning using Control Barrier Functions, Automatica, vol. 147, 2023 (in print)

- [A83] Max H. Cohen, Zachary Serlin, Kevin Leahy, Calin Belta, Temporal Logic Guided Safe Model-based Reinforcement Learning: A Hybrid Systems Approach, *Nonlinear Analysis Hybrid Systems (NAHS)*, vol. 47, 2023
- [A82] Noushin Mehdipour, Matthias Althoff, Radboud Duintjer Tebbens, Calin Belta, Formal Methods to Comply with Rules of the Road in Autonomous Driving: State of the Art and Grand Challenges, *Automatica*, vol. 152, 2023
- [A81] Wei Xiao, Calin Belta, Christos G. Cassandras, Event-Triggered Control for Safety-Critical Systems with Unknown Dynamics, *IEEE Transactions on Automatic Control*, vol. 68, issue 7, pp. 4143-4158, doi: 10.1109/TAC.2022.3202088, 2023
- [A80] W. Xiao and C. Belta, High-Order Control Barrier Functions, *IEEE Transactions on Automatic Control*, vol. 67, no. 7, pp. 3655-3662, July 2022, doi: 10.1109/TAC.2021.3105491.
- [A79] Kevin Leahy, Zachary Serlin, Cristian Ioan Vasile, Andrew Schoer, Austin Jones, Roberto Tron, Calin Belta, Scalable and Robust Algorithms for Task-based Coordination from High-level Specifications (ScRATChES), *IEEE Transactions on Robotics*, vol. 38, issue 4, pp. 2516-2535, 2022, DOI: 10.1109/TRO.2021.3130794
- [A78] Xiao, W., Cassandras, G.C. & Belta, C. Safety-Critical Optimal Control for Autonomous Systems. *J Syst Sci Complex* 34, 1723–1742 (2021). <https://doi.org/10.1007/s11424-021-1230-x>
- [A77] Wei Xiao, Calin A. Belta, Christos G. Cassandras, Sufficient conditions for feasibility of optimal control problems using Control Barrier Functions, *Automatica*, Volume 135, 2022, ISSN 0005-1098
- [A76] Wei Xiao, Calin Belta, Christos G. Cassandras, Adaptive Control Barrier Functions, *IEEE Transactions on Automatic Control*, vol. 67, no. 5, pp. 2267-2281, 2022
- [A75] Wenliang Liu and Noushin Mehdipour and Calin A. Belta, Recurrent Neural Network Controllers for Signal Temporal Logic Specifications Subject to Safety Constraints, *IEEE Control Systems Letters*, volume 6, pp. 91-96, 2022
- [A74] Giuseppe Bombara and Calin Belta, Offline and Online Learning of Signal Temporal Logic Formulae Using Decision Trees, *ACM Transactions on Cyber-Physical Systems*, vol. 5, no. 3, pp. 1-23, 2021
- [A73] Noushin Mehdipour, Cristian Ioan Vasile, Calin Belta, Specifying User Preferences using Weighted Signal Temporal Logic, *IEEE Control Systems Letters (L-CSS)*, 2021, DOI: 10.1109/LCSYS.2020.3047362
- [A72] Wei Xiao, Christos G. Cassandras, Calin Belta, Bridging the Gap between Optimal Trajectory Planning and Safety-Critical Control with Applications to Autonomous Vehicles, *Automatica*, vol.129, 2021
- [A71] Junmin Wang, Calin Belta, Samuel A. Isaacson, How Retroactivity Affects the Behavior of Incoherent Feedforward Loops, *iScience*, Volume 23, Issue 12, 2020, <https://doi.org/10.1016/j.isci.2020.101779>

- [A70] Cristian Vasile, Xiao Li, Calin Belta, Reactive sampling-based path planning with temporal logic specifications, *The International Journal of Robotics Research*, vol. 39, issue: 8, page(s): 1002-1028, 2020
- [A69] Zachary Serlin, Guang Yang, Brandon Sookraj, Calin Belta, Roberto Tron, Distributed and consistent multi-image feature matching via QuickMatch, *International Journal of Robotic Research*, <https://doi.org/10.1177/0278364920917465>, June 5, 2020
- [A68] C. Belta, Formal Methods for Controlling Dynamical Systems. In: Baillieul J., Samad T. (eds) *Encyclopedia of Systems and Control*. Springer, London, 2019
- [A67] Xiao Li, Zachary Serlin, Guang Yang, Calin Belta, A Formal Methods Approach to Interpretable Reinforcement Learning for Robotic Planning, *Science: Robotics*, vol. 4, issue 37, 2019
- [A66] Ashley RG Libby, Demarcus Briers, Iman Haghghi, David A. Joy, Bruce R. Conklin, Calin Belta, Todd C. McDevitt, Automated Design of Pluripotent Stem Cell Self-Organization, *Cell Systems*, vol. 9, pp.1-13, 2019
- [A65] Calin Belta and Sadra Sadraddini, Formal Methods for Control Synthesis: An Optimization Perspective, *Annual Review of Control, Robotics, and Autonomous Systems*, vol. 2, no. 1, pp. 115-140, 2019
- [A64] Junmin Wang, Samuel A. Isaacson, and Calin Belta, Modeling Genetic Circuit Behavior in Transiently Transfected Mammalian Cells, *ACS Synth. Biol.*, March, 2019 DOI: 10.1021 / acssynbio.8b00166
- [A63] Sadra Sadraddini and Calin Belta, Formal Synthesis of Control Strategies for Positive Monotone Systems, *IEEE Transactions on Automatic Control*, vol. 64, no. 2, 2019
- [A62] Erkan Kayacan, Wouter Saeys, Herman Ramon, Calin Belta, and Joshua Peschel, Experimental Validation of Linear and Nonlinear MPC on an Articulated Unmanned Ground Vehicle, *IEEE/ASME Transactions on Mechatronics*, vol. 23, issue 5, pp. 2023- 2030, 2018
- [A61] Cristian Ioan Vasile, Mac Schwager, Calin Belta, Translational and Rotational Invariance in Networked Dynamical Systems, *IEEE Transactions on Control of Network Systems*, vol. 5, issue 3, pp. 822 – 832, 2018
- [A60] Ezio Bartocci, Ebru Aydin Gol, Iman Haghghi, and Calin Belta, A Formal Methods Approach to Pattern Recognition and Synthesis in Reaction Diffusion Networks, *IEEE Transactions on Control of Network Systems*, Vol. 5, No. 1, pp. 308-320, March 2018
- [A59] Cristian-Ioan Vasile, Derya Aksaray, Calin Belta, Time Window Temporal Logic, *Theoretical Computer Science*, Volume 691, August 2017, Pages 27-54, DOI: 10.1016/j.tcs.2017.07.012, 2017
- [A58] Sadra Sadraddini, Sivaranjani S, Vijay Gupta, Calin Belta, Provably Safe Cruise Control of Vehicular Platoons, *IEEE Control Systems Letters*, vol. 1, no. 2, pp. 262-267, 2017

[A57] Kun Deng, Yushan Chen, Calin Belta, An Approximate Dynamic Programming Approach to Multi-Agent Persistent Monitoring in Stochastic Environments with Temporal Logic Constraints, *IEEE Transactions on Automatic Control*, vol. 62, no. 9, pp. 4549-4563, 2017

[A56] Zhe Xu, Marc Birtwistle, Calin Belta, Agung Julius, A Temporal Logic Inference Approach for Model Discrimination, *IEEE Life Sciences Letters*, vol. 2, no. 3, pp. 19-22, 2016

[A55] Samuel Coogan, Murat Arcaç, Calin Belta, Formal Methods for Control of Traffic Flow: Automated control synthesis from finite state transition models, *IEEE Control Systems Magazine*, vol. 37, issue 2, pp. 109 – 128, 2017

[A54] Maria Svorenova, Jan Kretinsky, Martin Chmelik, Krishnendu Chatterjee, Ivana Cerna, Calin Belta, Temporal Logic Control for Stochastic Linear Systems using Abstraction Refinement of Probabilistic Games, *Nonlinear Analysis: Hybrid Systems*, vol. 23, pp. 230–253, February 2017

[A53] Kong, Zhaodan, Jones, Austin, Belta, Calin, Temporal Logics for Learning and Detection of Anomalous Behavior, *IEEE Transactions on Automatic Control*, vol. 62, no. 3, pp. 1210 – 1222, 2017

[A52] Kevin Leahy, Dingjiang Zhou, Cristian-Ioan Vasile, Konstantinos Oikonomopoulos, Mac Schwager, Calin Belta, Persistent Surveillance for Unmanned Aerial Vehicles Subject to Charging and Temporal Logic Constraints, *Autonomous Robots*, volume 40, issue 8, pp 1363–1378, 2016

[A51] Samuel Coogan, Ebru Aydin Gol, Murat Arcaç, and Calin Belta, Traffic Network Control from Temporal Logic Specifications, *IEEE Transactions on Control of Network Systems*, vol. 3, no. 2, pp. 162 – 171, June 2016

[A50] Jing Wang, Xuchu Ding, Morteza Lahijanian, Ioannis Ch. Paschalidis, and Calin A. Belta, Temporal logic motion control using actor–critic methods, *The International Journal of Robotics Research*, Vol. 34(10) 1329–1344, 2015

[A49] Maria Svorenova, Ivana Cerna, and Calin Belta, Optimal Temporal Logic Control for Deterministic Transition Systems with Probabilistic Penalties, *IEEE Transactions in Automatic Control*, vol. 60, no. 6, pp. 1528-1541, 2015

[A48] Morteza Lahijanian, Sean B. Andersson, and Calin Belta, Formal Verification and Synthesis for Discrete-Time Stochastic Systems, *IEEE Transactions in Automatic Control*, vol. 6, no. 8, pp. 2031 – 2045, 2015

[A47] Ebru Aydin Gol, Mircea Lazar, and Calin Belta, Temporal Logic Model Predictive Control, *Automatica*, vol. 56, pp. 78-85, 2015

[A46] Alphan Ulusoy and Calin Belta, Receding Horizon Temporal Logic Control in Dynamic Environments, *The International Journal of Robotics Research (IJRR)*, vol. 33(12), pp. 1593-1607, 2014

[A45] Igor Cizelj and Calin Belta, Control of Noisy Differential-Drive Vehicles from Time-Bounded Temporal Logic Specifications, *The International Journal of Robotics Research (IJRR)*, vol. 33, no. 8, pp. 1112-1129, 2014

[A44] Ebru Aydin Gol, Xuchu Ding, Mircea Lazar, and Calin Belta, Finite Bisimulations for Switched Linear Systems, *IEEE Transactions on Automatic Control*, vol. 59, no. 12, pp. 3122 – 3134, 2014

[A43] Xuchu (Dennis) Ding, Stephen L. Smith, Calin Belta, and Daniela Rus, Optimal Control of Markov Decision Processes with Linear Temporal Logic Constraints, *IEEE Transactions on Automatic Control*, vol.59, no. 5, pp. 1244-1257, 2014

[A42] Ana Medina Ayala, Sean B. Andersson, and Calin Belta, Formal Synthesis of Control Policies for Continuous Time Markov Processes from Time-Bounded Temporal Logic Specifications, *IEEE Transactions on Automatic Control*, vol. 59, no. 9, pp. 2568-2574, 2014

[A41] Alphan Ulusoy, Tichakorn Wongpiromsarn, Calin Belta, Incremental Controller Synthesis in Probabilistic Environments with Temporal Logic Constraints, *The International Journal of Robotics Research (IJRR)*, vol. 33, no. 8, pp. 1130 – 1144, 2014

[A40] Xu Chu Ding, Mircea Lazar, Calin Belta, LTL Receding Horizon Control for Finite Deterministic Systems, *Automatica*, 50(2): 399-408, 2014

[A39] Ebru Aydin Gol, Mircea Lazar, Calin Belta, Language-Guided Controller Synthesis for Linear Systems, *IEEE Transactions on Automatic Control*, vol. 59, no. 5, pp. 1163-1176, 2014

[A38] Guilhem Richard, Niraj Trivedi, Calin Belta, and Salomon Amar, Partial Restoration of Macrophage Alteration from Diet-induced obesity in Response to *Porphyromonas gingivalis* Infection, *PLoS ONE* 8(7): e70320. doi:10.1371/journal.pone.0070320

[A37] E. Aydin Gol and C. Belta, Time-Constrained Temporal Logic Control of Multi-Affine Systems, *Nonlinear Analysis: Hybrid Systems*, Volume 10, Pages 21–33, Nov. 2013

[A36] A. Ulusoy, S. L. Smith, X. C. Ding, C. Belta, and D. Rus, Optimality and Robustness in Multi-Robot Path Planning with Temporal Logic Constraints, *The International Journal of Robotics Research (IJRR)*, Volume 32, Issue 8, pp. 889 – 911, July 2013

[A35] Y. Chen, J. Tumova, and C. Belta, Temporal Logic Robot Control based on Automata Learning of Environmental Dynamics, *The International Journal of Robotics Research*, vol. 32 no. 5, pp. 547-565, 2013

[A34] Boyan Yordanov, Jana Tumova, Ivana Cerna, Jiri Barnat, Calin Belta, Formal Analysis of Piecewise Affine Systems through Formula-Guided Refinement, *Automatica*, vol. 49, issue 1, pp. 261-266, 2013

[A33] Guilhem Richard, Calin Belta, A. Agung Julius, and Salomon Amar, Controlling the Outcome of the Toll-like Receptor Signaling Pathways, *PLoS ONE*, 7(2): e31341. doi:10.1371/ journal.pone.0031341, 2012

[A32] Morteza Lahijanian, Sean B. Andersson, and Calin Belta, Temporal Logic Motion Planning and Control with Probabilistic Satisfaction Guarantees, *IEEE Transaction on Robotics*, vol. 28, no. 2, pp. 396-409, 2012

- [A31] Y. Chen, D. Ding, A. Stefanescu, and C. Belta, A Formal Approach to the Deployment of Distributed Robotic Teams, *IEEE Transaction on Robotics*, vol. 28, issue 1, pp.158 – 171, 2012
- [A30] B. Yordanov, J. Tumova, I. Cerna, J. Barnat, C. Belta, Temporal Logic Control of Discrete-Time Piecewise Affine Systems, *IEEE Transactions on Automatic Control*, vol. 57, no. 6, pp. 1491-1504, 2012
- [A29] Xu Chu Ding, Marius Kloetzer, Yushan Chen, Calin Belta, Automatic Deployment of Robotic Teams: An Automata Theoretic Approach, *IEEE Robotics and Automation Magazine*, vol. 18, no. 3, pp. 75-86, 2011
- [A28] Amy LaViers, Yushan Chen, Calin Belta, Magnus Egerstedt, Automatic Sequencing of Ballet Poses, *IEEE Robotics and Automation Magazine*, vol. 18, no. 3, pp. 87-95, 2011
- [A27] Stephen Smith, Jana Tumova, Calin Belta, Daniela Rus, Optimal Path Planning for Surveillance with Temporal Logic Constraints, *International Journal of Robotics Research*, vol. 30, no. 14, pp. 1695-1708, 2011
- [A26] M. Imielinski and C. Belta, Deep epistasis in human metabolism, *Chaos*, vol.20, doi:10.1063/1.34560562010, 2010
- [A25] B. Yordanov and C. Belta, Formal analysis of discrete-time piecewise affine systems, *IEEE Transactions on Automatic Control*, vol. 55, no. 2, pp. 2834-2840, 2010
- [A24] M. Kloetzer, C. Mahulea, C. Belta, and M. Silva, An automated framework for formal verification of timed continuous Petri nets, *IEEE Transactions on Industrial Informatics*, vol. 6, no. 3, pp. 460-471, 2010
- [A23] M. Kloetzer and C. Belta, Automatic deployment of distributed teams of robots from temporal logic motion specifications, *IEEE Transactions on Robotics*, vol. 26, no. 1, pp. 48-61, 2010
- [A22] M. Kloetzer and C. Belta, Reachability analysis of multi-affine systems, *Transactions of the Institute of Measurement and Control, Special Issue on Hybrid Systems*, vol. 32, no. 5, pp. 445 – 467, 2010
- [A21] M. Imielinski and C. Belta, Exploiting the pathway structure of metabolism to reveal high-order epistasis, *BMC Systems Biology*, 2:40, 2008
- [A20] M. Kloetzer and C. Belta, A fully automated framework for control of linear systems from temporal logic specifications, *IEEE Transactions on Automatic Control*, vol. 53, no. 1, pp. 287-297, 2008
- [A19] G. Batt, C. Belta, and R. Weiss, Temporal logic analysis of gene networks under parameter uncertainty, *IEEE Transactions on Automatic Control*, vol.53, no. 1, pp. 215-229, 2008
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[S7] G. Batt and C. Belta, RoVerGeNe (Robust Verification of Gene Networks),

[S6] M. Kloetzer and C. Belta, LTLCon (Linear Temporal Logic Control of Linear Systems),

[S5] M. Kloetzer and C. Belta, RAMAS (Reachability Analysis of Multi-Affine Systems),

[S4] M. Kloetzer and C. Belta, ADR23 (Automatic deployment of robots in 2D and 3D environments)

[S3] B. Yordanov and C. Belta, FAPAS (Formal Analysis of Piecewise Affine Systems under Parameter Uncertainty)

[S2] B. Yordanov and C. Belta, ParSyPAS (Parameter Synthesis for Piecewise Affine Systems)

[S1] B. Yordanov and C. Belta, conPAS (Temporal Logic Control of Discrete-Time Piecewise Affine Systems)

PLENARY AND KEYNOTE INVITED LECTURES

[K8] IEEE CSS Distinguished Lecture (March 23, 2022, online), “Formal Synthesis of Control Strategies for Dynamical Systems”

[K7] MIT LIDS Student Conference (February 1, 2019, MIT), “Formal Synthesis of Control Strategies for Dynamical Systems”

[K6] IFAC Conference on Analysis and Design of Hybrid Systems (ADHS) 2018 (July 12, 2018, University of Oxford) - “Formal Synthesis of Control Strategies for Dynamical Systems”

[K5] Working Formal Methods Symposium (FROM) 2018 (June 18, 2018, Alexandru Ioan Cuza University of Iasi, Romania) - “Formal Synthesis of Control Strategies for Dynamical Systems”

[K4] CPS Bench Workshop 2018 (April 10, 2018, Porto, Portugal) – “Formal Synthesis of Control Strategies for Dynamical Systems”

[K3] Northeast Robotics Colloquium (NERC) 2017 (October 21, 2017, Northeastern University, Boston, MA) – “Formal Synthesis of Control Strategies for Robotic Systems”

[K2] 21st International Symposium on Temporal Representation and Reasoning (TIME) 2014 (September 8, 2014, Verona, Italy) – “Formal Methods for Dynamical Systems”

[K1] Hybrid Systems: Computation and Control (HSCC) (April 17 2012, Beijing, China) – “Formal Methods for Dynamical Systems”

SHORT COURSES

[S5] KTH, Stockholm, Sweden (March 30 – June 3, 2022), “Formal Methods in Control Design: From Discrete Synthesis to Continuous Controllers” (with Antoine Girard, as part of the European Embedded Control Institute (EECI) - International Graduate School on Control (IGSC))

[S4] Università degli Studi di Pavia, Pavia, Italy (Sep 3-6, 2019), “Formal Methods for Systems”

[S3] Centrale Supélec, Saclay, France (Jan 14-18, 2019), “Formal Methods in Control Design: From Discrete Synthesis to Continuous Controllers” (with Antoine Girard, as part of the European Embedded Control Institute (EECI) - International Graduate School on Control (IGSC))

[S2] Las Vegas, NV (Dec. 13, 2016), “Formal Synthesis of Control Strategies for Dynamical Systems” (as part of IEEE Conference on Decision and Control (CDC))

[S1] King Abdulah University of Science and Technology (KAUST), Jeddah, Saudi Arabia (May 4-8, 2015), “Formal Synthesis of Control Strategies for Dynamical Systems”

INVITED LECTURES IN ACADEMIA

[L79] Massachusetts Institute of Technology, Cambridge, MA, Laboratory for Information and Decision Systems (LIDS), (10/30/2023) – “Formal Methods for Safety Critical Control”

[L78] University of Maryland, College Park, MD, USA, Department of Electrical and Computer Engineering, (05/25/2023) - “Formal Methods for Safety Critical Control”

[L77] University of Michigan, Ann Arbor, MA, Control Seminar Series, (10/20/2023) – “Formal Methods for Safety Critical Control”

[L76] Northeastern University, Boston, USA, Department of Electrical and Computer Engineering, (03/02/2023) – “Formal Methods for Safety Critical Control”

[L75] University of Texas, Austin, USA, Department of Electrical and Computer Engineering, (02/24/2023) – “Formal Methods for Safety Critical Control”

[L74] University of California, Santa Barbara, CA, USA, Department of Electrical and Computer Engineering, (05/20/2022) – “Optimization-based Formal Synthesis of Control Strategies for Dynamical Systems”

[L73] University of Maryland, College Park, MD, USA, Maryland Robotics Center, (09/24/2021) – “Optimization-based Formal Synthesis of Control Strategies for Dynamical Systems”

[L71] University of Southern California, Los Angeles, USA, Department of Electrical and Computer Engineering, (10/09/2019) – “Optimization-based Formal Synthesis of Control Strategies for Dynamical Systems”

[L70] University of Toronto, Toronto, Canada, Department of Electrical and Computer Engineering, (08/01/2019) – “Correctness and Optimality for Control Systems”

[L69] Institute of Science and Technology, Klosterneuburg, Austria, Department of Informatics, (06/28/2019) – “Correctness and Optimality for Control Systems”

[L68] Technical University of Vienna, Vienna, Austria, Department of Informatics, (06/27/2019) – “Correctness and Optimality for Control Systems”

[L67] Royal University of Technology (KTH), Stockholm, Sweden, Department of Computer Science, (04/25/2019) – “Correctness and Optimality for Control Systems”

[L66] Duke University, Department of Material Engineering and Material Science, (02/07/2018) – “Formal Synthesis of Control Strategies for Dynamical Systems”

[L65] Indian Institute of Science, Bangalore, India, Robert Bosch Centre for Cyber-Physical Systems, (07/20/2017)

– “Formal Synthesis of Control Strategies for Dynamical Systems”

[L64] Indian Institute of Science, Bangalore, India, Department of Biomedical Engineering, (07/21/2017)

– “Engineering global behaviors in Populations of Living Cells”

[L63] Yale University, New Haven, CT, Department of Electrical Engineering, (02/10/2017) - “Formal Synthesis of Control Strategies for Dynamical Systems”

[L62] University of Connecticut, Storrs, CT, UTC Institute for Advanced System Engineering, (05/03/2016) - “Formal Methods for Dynamical Systems”

[L61] Technical University of Vienna, Vienna, Austria, Department of Informatics, (04/16/2016) - “Formal Methods for Dynamical Systems”

[L60] University of Virginia, Charlottesville, VA, Computer Science Department, (03/25/2016) - “Formal Methods for Dynamical Systems”

[L59] Royal University of Technology (KTH), Stockholm, Sweden, Automatic Control Department, (01/21/2016) - “Formal Methods for Dynamical Systems”

[L58] University of California, Berkeley, CA, Electrical Engineering and Computer Science, (09/28/2015) - “Formal Methods for Dynamical Systems”

[L57] King Abdullah University of Science and Technology (KAUST), Kingdom of Saudi Arabia, Computer, Electrical and Mathematical Sciences & Engineering, (05/05/2015) - “Formal Methods for Dynamical Systems”

[L56] King Abdullah University of Science and Technology (KAUST), Kingdom of Saudi Arabia, Computer, Electrical and Mathematical Sciences & Engineering, (05/04/2015) – Short Course on “Formal Synthesis of Control Strategies”

[L55] Massachusetts Institute of Technology, Cambridge, MA, Department of Mechanical Engineering, (03/31/2015) - “Formal Methods for Dynamical Systems”

[L54] Worcester Polytechnic Institute, Worcester, MA, Department of Mechanical Engineering, (02/11/2015) - “Formal Methods for Dynamical Systems”

[L53] University of Maryland, College Park, UTRC Seminar Series, Institute for Systems Research, (09/12/2014) - “Formal Methods for Dynamical Systems”

[L52] University of Hong Kong, Department of Electrical and Electronic Engineering, (08/20/2013) - “Formal Methods for Dynamical Systems”

[L51] Georgia Institute of Technology, School of Aerospace Engineering, (04/04/2013) - “Formal Methods for Discrete-Time Linear Systems”

[L50] University of Pennsylvania, GRASP Laboratory, (02/15/2013) - “Formal Methods for Discrete-Time Linear Systems”

[L49] National University of Singapore, Singapore, Mechanical Engineering, (02/05/2013) - “Formal Methods for Discrete-Time Linear Systems”

[L48] University of California, San Diego, Mechanical and Aerospace Engineering, (04/13/2012) - “Formal Methods for Discrete-Time Linear Systems”

[L47] University of Illinois, Urbana Champaign, Coordinated Science Laboratory, (02/22/2012) - “Formal Methods for Dynamical Systems”

[L46] TU Delft, Department of Mechanical, Maritime, and Materials Engineering, Delft, Netherlands, (11/17/2011) - “Verification and Control of Piecewise Affine Systems with Applications to Synthetic Biological Networks”

[L45] TU Eindhoven, Department of Electrical Engineering, Eindhoven, Netherlands, (11/16/2011) - “Verification and Control of Piecewise Affine Systems with Applications to Synthetic Biological Networks”

[L44] ETH, Automatic Control Laboratory, Zurich, Switzerland, (11/09/2011) - “Verification and Control of Piecewise Affine Systems with Applications to Synthetic Biological Networks”

[L43] Universite Joseph Fourier and Laboratoire Jean Kuntzmann, Grenoble, France, (10/18/2011) - “Formal Verification and Control of Piecewise Affine Systems with Applications to Biological Networks”

[L42] Groupe de Recherche Modelisation, Analyse et Conduite des Systemes Dynamiques, Paris, France, (10/13/2011) - “Formal Approaches to Motion Planning and Control”

[L41] INRIA, Rocquencourt, France, (10/10/2011) - “Formal Verification and Control of Piecewise Affine Systems with Applications to Biological Networks”

[L40] Carnegie Mellon University, School of Computer Science, (06/03/2011) - “Formal Verification and Synthesis of Discrete-Time Piecewise Affine Systems”

[L39] Georgia Institute of Technology, Decision and Control Laboratory, (02/25/2011) - “Formal Synthesis Approaches to Robot Motion Planning and Control”

[L38] Harvard University, School of Engineering and Applied Sciences, (02/11/2010) - “Synthesis of Provably-Correct Control and Communication Strategies for Distributed Systems”

[L37] University of Delaware, Department of Mechanical Engineering, (10/30/09) - “Synthesis of Provably-Correct Control and Communication Strategies for Distributed Systems”

[L36] University of California, Los Angeles, Department of Electrical Engineering, (09/22/09) - “Synthesis of Provably-Correct Control and Communication Strategies for Distributed Systems”

[L35] Masaryk University, Department of Informatics, (05/27/2009) – “Temporal Logic Motion Planning and Control”

[L34] Masaryk University, Department of Informatics, (05/28/2009) – “Scalable algorithms for analysis and control of biochemical networks”

[L33] Harvard University, Department of Electrical Engineering, (02/06/2009) – “Temporal logic motion planning and control”

[L32] Northeastern University, Center for Complex Networks Research, Department of Physics, (02/02/2009) – “Insights into the functional organization and robustness of genome scale metabolism”

[L31] University of Maryland, Baltimore County, Applied Mathematics and Statistics (12/05/2008) – “Insights into the functional organization and robustness of genome scale metabolism”

[L30] Massachusetts Institute of Technology, Mechanical Engineering, (05/15/2008) – “Automatic deployment of robotic teams from rich specifications”

[L29] Nanyang Technological University, Singapore, Division of Control and Instrumentation, (03/07/2008) – “Distributed Executions of Rich, Global Motion Specifications

[L28] University of California, Santa Barbara, Center for Control, Dynamical Systems, and Computation (CCDC), (02/22/2008) – “Distributed implementations of global temporal logic motion specifications”

[L27] Massachusetts Institute of Technology, Laboratory for Information and Decision Systems (LIDS), (02/12/2008) – “Distributed implementations of global temporal logic motion specifications”

[L26] National University of Singapore, Electrical and Computer Engineering, (08/13/2007) – “Temporal logic motion planning and control for robotic swarms”

[L25] Columbia University, Electrical Engineering, (04/18/2007) – “Scalable Algorithms for Analysis of Metabolic and Gene Networks”

[L24] Technische Universiteit Eindhoven, Electrical Engineering, (04/02/2007) – “Verification and Control of Hybrid Systems: Applications to Biochemical and Robotic Networks”

[L23] University of California, Berkeley, Mechanical Engineering, (03/15/2007) – “Temporal logic motion planning and control for robotic swarms”

[L22] Massachusetts Institute of Technology, Mechanical Engineering, (03/13/2007) – “Temporal logic motion planning and control for robotic swarms”

[L21] Cornell University, Sibley School of Mechanical and Aerospace Engineering, (02/22/2007) – “Temporal logic motion planning and control”

[L20] City College of New York, Electrical and Computer Engineering, (02/20/2007) – “Temporal logic motion planning and control”

[L19] Worcester Polytechnic Institute, Mechanical Engineering, (12/01/2006) – “Temporal logic motion planning and control”

[L18] Boston University, Center for BioDynamics, (05/24/06) – “Abstractions for swarms and biochemical networks”

[L17] Boston University, Bioinformatics, (03/23/06) – “Analysis of metabolic and genetic networks”

[L16] Massachusetts Institute of Technology, Computer Science and Artificial Intelligence Lab, Robotics Seminar Series, (02/28/06) – “Hierarchical Abstractions for Planning and Control of Robotic Swarms”

[L15] Boston University, Manufacturing Engineering Department, (02/19/06) – “Analysis of metabolic and genetic networks”

[L14] Boston University, Computer Science Department, (02/01/06) – “Analysis of metabolic and genetic networks”

[L13] Boston University, Center for Information and Systems Engineering (09/30/05) – “Hierarchical Abstractions for Robot Motion Planning and Control”

[L12] Workshop on Swarming in Natural and Engineered Systems, Napa Valley, CA (08/03/2005) – “Hierarchical Abstractions for Robot Motion Planning and Control”

[L11] Dartmouth College, Thayer School of Engineering Science (03/25/05) – “Abstractions for Robot Motion Planning and Control”

[L10] Duke University, Mechanical Engineering and Materials Science (02/23/05) – “Abstractions for Robot Motion Planning and Control”

[L9] University of Pennsylvania, GRASP Lab Seminar Series (01/21/05) – “Abstractions for Planning and Control of Robotic Swarms”

[L8] University of Virginia, Mechanical and Aerospace Engineering (11/29/04) – “Analysis of Metabolic and Genetic Networks”

[L7] Boston University, Manufacturing Engineering (11/10/04) – “Analysis of Metabolic and Genetic Networks”

[L6] Drexel University, Physics (04/22/04) – “Reachability Analysis and Control of Rectangular Multi-Affine Hybrid Systems”

[L5] Drexel University, Biomedical Engineering (02/13/04) – “Analysis of metabolic and genetic networks”

[L4] University of Notre Dame, Center for Applied Mathematics (02/06/04) - “Reachability Analysis and Control of Rectangular Multi-Affine Hybrid Systems”

[L3] University of Illinois Chicago, Electrical Engineering (02/05/04) - “Reachability Analysis and Control of Rectangular Multi-Affine Hybrid Systems”

[L2] University of Pennsylvania, Mechanical Engineering and Applied Mechanics (03/12/03) – “Representation, modeling, and analysis of metabolic and genetic networks”

[L1] Princeton University, Electrical Engineering (01/14/03) – “Modeling, analysis, and control of genetic networks”

INVITED PRESENTATIONS AT WORKSHOPS, CONFERENCES, AND IN INDUSTRY

[157] AI Institute, Cambridge, MA (03/08/2023), “Formal Methods for Autonomy”

[156] ICRA 2022 Workshop on Safe and Reliable Robot Autonomy under Uncertainty (05/27/2022), “Compositional Synthesis of Control Strategies for Uncertain Interconnected Systems”

[155] Verification of Autonomous & Robotic Systems (VARS) (05/18/2021), “Safe Control from Signal Temporal Logic Specifications Using Recurrent Neural Networks”

[154] Workshop on Synthesis of Models and Systems, Simons Institute program on Theoretical Foundations of Computer Systems, UC Berkeley, (04/26/2021), “Optimization-based Formal Synthesis of Control Strategies for Dynamical Systems”

[153] MIT CSAIL and Schlumberger-Doll Research workshop on "Robust Autonomy for Complex Environments", MIT, (10/09/2019), “Optimization-based Formal Synthesis of Control Strategies for Dynamical Systems”

[152] Aptiv, Boston, (09/19/2019) - “Optimization-based Formal Synthesis”

[151] LIDS Student Conference, MIT, (02/1/2019) - “Formal Synthesis of Control Strategies for Dynamical Systems”

[150] Computational Modeling in Biology Network (COMBINE), Boston University, (10/8/2018) - “Pattern Synthesis in Cellular Systems”

[149] Workshop on Runtime Verification for Rigorous Systems Engineering, University of Oxford, (07/13/2018) - “Signal Classification using Temporal Logics”

[148] Workshop on Validation and Verification of Autonomous Systems, University of Oxford, (07/18/2018) - “Formal Synthesis of Control Strategies for Dynamical Systems”

[147] 2nd Symposium on the Control of Network Systems (SCONES), Boston University, (10/17/2017) - “Resilient (Distributed) Formal Synthesis”

[146] Workshop on Specifying Planning Problems in Robotics, Robotics: Science and Systems (RSS), MIT, (07/15/2017) - “Optimality and Correctness in Formal Synthesis”

[145] Workshop on Heterogeneity and Diversity for Resilience in Multi-Robot Systems, Robotics: Science and Systems (RSS), MIT, (07/15/2017) - “Resilient Distributed Formal Synthesis”

[144] Raytheon, Tewksbury, MA, (04/25/2017) - “Formal Synthesis of Control Strategies for Dynamical Systems”

[143] MIT Lincoln Lab, Lexington, MA, (03/21/2017) - “Formal Synthesis of Control Strategies for Dynamical Systems”

[142] Boston University, Boston, MA, Center for Information and Systems Engineering, Workshop on AI and Robotics, (02/28/2017) - “Formal Languages for Human-Robot Interaction”

[141] Technical University of Munich, Munich, Germany, Institute for Advanced Study, International Symposium on Networked Cyber Physical Systems, (09/20/2016) - “Formal Methods for Control of Traffic Networks”

[140] ARL Workshop on Heterogeneity, Diversity, and Resilience in Multi-Robot Systems, Arlington Gateway, VA (08/15/2016) – “Resilient Formal Synthesis”

[139] DENSO Corporation, Tokyo, Japan (03/04/2016) - “Formal Methods for Dynamical Systems”

[138] DENSO Corporation, Kariya, Aichi, Japan (03/03/2016) - “Learning, Detection, and Mitigation of Anomalies in Automotive Systems”

[137] Workshop on Towards Scalable Formal Synthesis of Complex Systems (Dec. 14, 2015, Osaka, Japan, part of CDC 2015) – “Formal Synthesis of Control Strategies for Systems with Many States”

[136] NSF Cyber Physical Systems PI Meeting (Nov. 16, 2015, Arlington, VA) – “bioCPS for Engineering Living Cells”

[135] Workshop on Abstraction and Synthesis of Correct-by-Construction Robotics Software: Reuniting Formal Methods with Model-Driven Software Engineering (AbSynth) (July 17, 2015, Rome, Italy, part of RSS 2015) – “Formal Synthesis of Control Strategies for Systems with Many States”

[134] Workshop on Design and Analysis of Biological Networks (July 2, 2015, Chicago, IL, part of American Control Conference (ACC) 2015) – “Verification of gene networks”

[133] Rutgers University - The Very Best of Robotics Today (March 28, 2015, New Brunswick, NJ) – “Formal Synthesis of Control Strategies in Large Configuration Spaces”

[132] Toyota Summit on Industrial Cyberphysical Systems, Toyota Research Center, (December 18, 2014, Torrance, California) – “Formal Methods for Large Dynamical Systems”

[131] NATO STO SET RTG-199 (November 20, 2014, Lecce, Italy) – “Formal Methods for Networked Dynamical Systems”

[130] Schloss Dagstuhl - Leibniz Center for Informatics (October 28, 2014, Wadern, Germany) – “Spatial Temporal Logic Inference, Verification, and Synthesis”

[129] 5th Workshop on Formal Methods in Robotics (July 13, 2014, UC Berkeley, CA, part of RSS 2014) – “Formal Methods for Robotics: Motivation and Challenges”

[I28] Rice University - The Very Best of Robotics Today (April 4, 2014, Houston, TX) – “Formal Synthesis of Control Strategies in Large Configuration Spaces”

[I27] Schloss Dagstuhl - Leibniz Center for Informatics (March 18, 2014, Wadern, Germany) – “Formal Methods for Control Design”

[I26] ONR Maritime Unmanned Systems Meeting (Jan 27, 2014, Panama City, FL) – “Formal Methods for Dynamical Systems: Results and Challenges”

[I25] Intelligent Systems Army Science Planning & Strategy Meeting (Nov. 12, 2013, Potomac, MD) – “Formal Synthesis of Control Strategies in Partially Known and Dynamic Environments”

[I24] NSF Cyber Physical Systems PI Meeting (Oct. 17, 2013, Arlington, VA) – “Formal Synthesis with Learning of Environmental Dynamics”

[I23] 4th Workshop on Formal Methods in Robotics (June 27, 2013, TU Berlin, Germany, part of RSS 2013) – “Optimality and Correctness in Robot Motion Planning and Control”

[I22] AFOSR Workshop on Future Directions in Control (June 19, 2013, Arlington, MD) - “Challenges in Formal Synthesis”

[I21] LCCC Workshop on Formal Verification of Embedded Control Systems (April 17 2013, Lund University, Sweden) - “Formal Methods for Discrete-time Linear Systems”

[I20] NSF Workshop on Formal Composition of Motion Primitives (April 8 2013, Philadelphia, MA, USA) – “Verification and Control for Discrete-time Linear Systems”

[I19] NSF Workshop on Formal Composition of Motion Primitives (June 12 2012, MIT, Cambridge, MA, USA) – “Formal Approaches to Motion Planning and Control”

[I18] Workshop on Formal Methods for Robotics and Automation (July 15 2011, CAV 2011, Snowbird, Utah) – “Formal Approaches to Motion Planning and Control: Results and Open Questions”

[I17] AFOSR Dynamics and Control Program Review (June 16, 2011, Arlington, VA, USA) – “Formal Verification and Synthesis of Discrete-Time Piecewise Affine Systems”

[I16] AFOSR Dynamics and Control Program Review (Aug 11, 2010, Arlington, VA, USA) – “A Formal Approach to the Deployment of Robotic Teams”

[I15] Workshop on Network Science and Systems Issues in Multi-robot Autonomy (May 3 2010, ICRA 2010, Anchorage, Alaska) – “A Formal Approach to Deployment of Robotic Teams in an Urban-Like Environment”

[I14] Workshop on Formal Methods for Robotics and Automation (May 3 2010, ICRA 2010, Anchorage, Alaska) – “Synthesis of provably-correct control and communication strategies for distributed mobile systems”

[I13] Workshop on Synthetic Biology (Jan 28, 2010, Ohio State University) – “Formal Approaches to the Design, Synthesis, and Control of Synthetic Gene Networks”

[I12] Mass Technology Leadership Council Summit on the Future of Robotics (Dec 8 2009, Boston, MA, USA) – “Robotics Research at Boston University”

[I11] Caltech Workshop on Validation and Verification (Sept 23 2009, Pasadena, CA, USA) – “Synthesis of Provably-Correct Control and Communication Strategies for Distributed Systems”

[I10] United Technology Research Center, (Sept 9, 2009, Hartford, CO, USA) – “Formal Approaches to Robot Motion Planning and Control”

[I9] AFOSR Dynamics and Control Program Review (July 16, 2009, Washington, DC, USA) – “Automatic Deployment of Robotic Teams from Temporal Logic Specifications”

[I8] Third Workshop on Swarming in Natural and Engineered Systems (June 4, 2009, Block Island, RI, USA) – “Automatic deployment of robotic teams from rich specifications”

[I7] Workshop on Formal Methods in Robotics and Automation (ICRA 2009, Kobe, Japan) – “Automatic deployment of robotic teams from temporal logic specifications”

[I6] Workshop on Algorithmic Automation (ICRA 2008, Pasadena, CA) - “Provably-correct distributed implementations of global motion specifications”

[I5] NSF Workshop on Real Time Control of Hybrid Systems (Oct 29, 2007, Hungarian Academy of Sciences, Budapest, Hungary) – “Symbolic planning and control of robot motion”

[I4] Workshop on Collective Behaviors Inspired by Biological and Biochemical Systems (ICRA 2007, Rome, Italy) – “Building blocks for cellular robotics”

[I3] Workshop on Hybrid Systems Biology (CDC 2006, San Diego, CA) – “Computational tools for robustness analysis and tuning of synthetic gene networks”

[I2] Workshop on Swarming in Natural and Engineered Systems (Aug. 2005, Napa Valley, CA) – “Hierarchical abstractions for planning and control of robotic swarms”

[I1] US-Korea Conference (UKC 2004, Research Triangle, NC) – “Towards Cellular Robotics”

PROFESSIONAL ACTIVITIES

Conference Chairs and Organizing Committees:

- *Co-Chair, International Conference on Intelligent Robots and Systems (IROS), Prague, Czech Republic, 2021*
- *Organizer (with Magnus Egerstedt), NSF S&AS PI Meeting, Alexandria, VA, USA, April 5-6, 2018*

- *Organizer (with Rupak Majumdar and Majid Zamani), Dagstuhl Seminar 17201, "Formal Synthesis of Cyber-Physical Systems", Dagstuhl, Germany, May 2017*
- *Area Chair, Robotics: Science and Systems (RSS), Rome, Italy, June 2015*
- *Area Chair, Robotics: Science and Systems (RSS), Berkeley, CA, June 2014*
- *Chair, Int. Workshop on Hybrid Systems: Computation and Control (HSCC), Philadelphia, USA, April 2013*
- *Chair, NSF Workshop on Formal Composition of Motion Primitives, MIT, Cambridge, USA, June 12, 2012*
- *Workshops Chair, IEEE Int. Conference of Robotics and Automation, Anchorage, AK, May 2010*
- *Webmaster, IEEE Conference on Decision and Control (CDC), Shanghai, China, Dec 2009*

Conference Program Committees:

- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC), Pittsburgh, PA, April 2016*
- *Verification of Engineered Molecular Devices and Programs (VEMDP) 2014, Vienna, Austria, July, 2014*
- *53rd IEEE Conference on Decision and Control (CDC2014), (member of the technical program committee) Los Angeles, CA, USA, Dec. 2014*
- *Sixth NASA Formal Methods Symposium (NFM2014), NASA Johnson Space Center, Houston, Texas, USA, April 2014*
- *Hybrid Systems and Biology (HSB 2013), Taormina, Italy, September 2013*
- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC), Berlin, Germany, April 2014*
- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC), Philadelphia, PA, April 2013*
- *4th IFAC Workshop on Distributed Estimation and Control in Networked Systems (NecSys), Koblenz, Germany, September 2013*
- *Second Workshop on Hybrid Systems and Biology, September 2013, Italy*
- *Robotics: Science and Systems (RSS), Berlin, Germany, June 2013*
- *Robotics: Science and Systems (RSS), Sydney, Australia, July 2012*
- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC), Beijing, China, April 2012*
- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC), Chicago, IL, April 2011*
- *10th International Symposium on Distributed Autonomous Systems (DARS), Lausanne, Switzerland, Nov. 2010*
- *IEEE Multi-Conference on Systems and Control, (MSC), Saint Petersburg, Russia, July, 2009*
- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC), San Francisco, CA, USA, April 2009*
- *Robotics: Science and Systems (RSS), Zurich, Switzerland, June 2008*
- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC), St. Louis, USA, April 2008*
- *13th International Conference on Advanced Robotics (ICAR), Jeju Island, Korea, 2007*
- *IEEE/RSJ Int. Conference on Intelligent Robots and Systems (IROS), San Diego, CA, October 2007*
- *Int. Conf. on Robot Communication and Coordination (ROBOCOMM), Athens, Greece, Sept. 2007*
- *26th American Control Conference (ACC), New York, NY, July 2007*
- *IEEE Int. Conference on Robotics and Automation (ICRA), Rome, Italy, 2007*

- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC)*, Pisa, Italy, March 2007
- *IEEE/RSJ Int. Conference on Intelligent Robots and Systems (IROS)*, Beijing, China, October 2006
- *IEEE Int. Conference on Robotics and Automation (ICRA)*, FL, May 2006
- *Int. Workshop on Hybrid Systems: Computation and Control (HSCC)*, Santa Barbara, CA, March 2006
- *IEEE Int. Conference on Robotics and Automation (ICRA)*, Barcelona, Spain, May 2005
- *Robotics: Science and Systems (RSS)*, Boston, MA, June 2005
- *IEEE/RSJ Int. Conference on Intelligent Robots (IROS)*, Edmonton, Canada, August 2005
- *Int. Conference on Advanced Robotics (ICAR)*, Seattle, WA, July 2005

Editorial Activities and Technical Committees:

- IEEE Fellow Evaluation Committee, Robotics and Automation Society, 2022
- Associate Editor, IEEE Robotics and Automation Letters (2016 – 2020)
- Editor for the Cyber Physical Systems Series of MIT Press, (2016 – present)
- Associate Editor, IEEE Transactions on Automatic Control (2014 – 2016)
- Chair of IEEE CSS Technical Committee on Systems Biology (2012 – 2014)
- Associate Editor, SIAM Journal on Control and Optimization (SICON) (2008 – 2014)
- Member of the IEEE CSS Technical Committee on Systems Biology (2009 - 2012)
- Member of the IEEE CSS Technical Committee on Networks and Communications – Chair of the Working Group on Biological Networks (2009 – present)
- Member of the IFAC Technical Committee on Discrete Event and Hybrid Systems, Oct. 2008 -
- Associate Editor, Conference Editorial Board of the IEEE Control Systems Society (2006-2009)
- Associate Editor, Conference Editorial Board of the IEEE Robotics and Automation Society (2006-2009)
- Steering Committee Member, IEEE RAS Technical Committee on Algorithms for Planning and Control of Robot Motion (2006-2008)

Panels:

- NSF Panel March 2005, NSF Panel May 2005, NSF Panel October 2005, NSF Panel May 2006, NSF Panel Sept. 2006, NSF Panel June 2007, NSF Panel October 2007, NSF Panel January 2008, NSF Summit on Cyber-Physical Systems April 2008, NSF Panel Oct. 2008, NSF Panel June 2009, NSF Panel April 2010, NSF Panel May 2012, NSF Panel June 2013, NSF Panel August 2013, NSF Panel October 2017

Organized Workshops and Invited Sessions:

- Tutorial Session on Formal Methods for Dynamical Systems (organizer, speaker, as part of 55th IEEE Conference on Decision and Control CDC), Las Vegas, NV, 2016
- 5th Workshop on Formal Methods for Robotics and Automation (organizer, as part of RSS), Berkeley, CA, July 12, 2014
- Invited session on Formal Methods in Control (organizer, with Tichakorn Wongpiromsarn, as part of CDC), Maui, Hawaii, Dec 2012
- NSF Workshop on Formal Composition of Motion Primitives, MIT, Cambridge, USA, June 12, 2012

- Invited session on Formal Methods for Analysis and Controller Synthesis (organizer, with Dennis Ding and Mircea Lazar, as part of ACC), Montreal, Canada, June 2012
- Invited session on Approaches for guaranteeing high-level robot behaviors (organizer, with Hadas Kress Gazit, as part of ICRA), Saint Paul, Minnesota, USA, May 2012
- Invited session on Identification and Analysis of Biological Networks (organizer, with Agung Julius, as part of CDC), Orlando, Florida, Dec. 2011
- Invited session on Symbolic Approaches to Control of Dynamical Systems (organizer, with Sean Andersson, as part of CDC), Shanghai, China, Dec. 2009
- Workshop on Hybrid Systems Biology (organizer, with Radu Grosu, as part of HSCC), San Francisco, CA, USA, April 2009
- Invited Session on Analysis and Control of Biochemical Networks (organizer, with Agung Julius, as part of CDC), Cancun, Mexico, Dec. 2008
- Invited Session on Symbolic Methods for Control of Mobile Robots (organizer, with Magnus Egerstedt, as part of ICRA), Rome, March 2007
- Workshop on Symbolic Approaches to Robot Planning and Control (organizer, with George J. Pappas), (as part of Robotics: Science and Systems), University of Pennsylvania, Philadelphia, PA, Aug. 2006

Service:

- Director of the BU Center for Robotics and Autonomous Systems (CARS), 2018 -
- Director of the BU Robotics Lab, 2015 -
- Member of the BU COE APT Committee, 2017-2018
- Member of Graduate Committee, Systems Engineering, 2017-2018
- Member of Graduate Committee, Mechanical Engineering, 2017-2018
- Chair of Faculty Search Committee in Robotics, Mechanical Engineering, 2016-2017
- Member of the SE Grad Committee 2016 - 2017
- Member of the ME Strategy Committee, 2014 - 2015
- Chair of Faculty Search Committee in Robotics / CPS, Mechanical Engineering, 2014-2015
- Faculty Search Committee, Systems Engineering, 2013-2014
- Faculty Search Committee, Mechanical Engineering, 2013-2014
- Chair of BU Mechanical Engineering Seminars Committee, 2012
- Member of the ME Grad Committee 2010-2012, 2014
- Member of the SE Grad Committee 2009-present
- Member of the BME Systems and Synthetic Biology Faculty Search Committee, 2010
- Member of the ME Controls Faculty Search Committee, 2010
- Chair of the Posters Committee, Systems Engineering, Fall 2008
- Member of the Graduate Committee, Bioinformatics, BU, Dec. 2009 -
- Member of the Graduate Committee, Mechanical Engineering, Dept., BU, Sept. 2008 -
- Member of the Website Committee, Mechanical Engineering, Dept., BU, Sept. 2008 -
- Member of the Graduate Committee, Manufacturing Engineering Dept., BU, Sept. 2005 – July 2008
- Member of the Math Qualifier Committee, College of Engineering, BU, Sept. 2005 – July 2008
- Member of the Retreat Planning Committee, Manufacturing Engineering Department, BU, Sept. 2006 – July 2008

Consultance:

- Motional, Aug. 2019 - present
- DENSO Corporation, Nov. 2014 - 2016
- NATO Science and Technology Organization, SET RTG-199, Nov. 2014
- UTRC, Oct.-Dec. 2010

TEACHING EXPERIENCE

Mechanical Eng. / Systems Eng. / Bioinformatics, Boston University, July. 2005 - Present

- *Introduction to Linear Algebra*, (undergrad level), Fall 2005, Spring 2011, Spring 2012, Fall 2012, Spring 2017, Fall 2017
- *Introduction to Robotics* (undergrad level, new course), Fall 2006, Spring 2008, Spring 2013, Spring 2014
- *Robot Motion Planning* (grad level, new course), Spring 2007, Fall 2008
- *Dynamics and Evolution of Biological Networks* (grad level, new course), Spring 2007
- *Hybrid Systems: Theory, Computation, and Applications* (grad level, new course), Fall 2007, Fall 2013
- *Nonlinear Systems and Control* (grad level), Spring 2009
- *Engineering Mechanics II* (undergrad level), Fall 2009, Spring 2010

Mechanical Engineering and Mechanics, Drexel University, Sept. 2003 – July 2005

- *Introduction to Control* (undergrad level), Fall 2003, Winter 2004, Fall 2004, Winter 2005
- *Introduction to Systems Biology* (grad level, new course), Spring 2004
- *Hybrid Systems Theory and Computation* (grad level, new course), Spring 2005

SUPERVISION OF PHD STUDENTS

Andrew Huss, Systems Engineering, 2022 - present
Carter Berlind, Mechanical Engineering, 2022 - present
Shuo Liu, Mechanical Engineering, 2021 - present
Peter Crowley, Mechanical Engineering, 2021 - present
Mohammad Mehdi Kermanshah, Systems Engineering, 2021 - present
Ahmad Ahmad, Mechanical Engineering, 2021 - present
Wenliang Liu, Mechanical Engineering, 2018 - present
Erfan Aasi, Mechanical Engineering, 2019 – present

Kasra Ghasemi, Mechanical Engineering, 2018 – 2023, (now at Cruise)

Suhail Alsalehi, Systems Engineering, 2019 – 2023, (now at Bain and Co.)

Max Cohen, Mechanical Engineering, 2019 – 2023, Thesis: (now a postdoctoral associate, Caltech)

Wei Xiao, Systems Engineering, 2018 – 2021, Thesis: “Optimal Control and Learning for Safety-Critical Autonomous Systems” (now a postdoctoral associate, MIT)

Guang Yang, Systems Engineering, 2016 – 2020, Thesis: “Motion Planning and Control for Safety-critical Systems” (now a postdoctoral associate, University of Cambridge, UK)

Noushin Medhipur, Systems Engineering, 2016 – 2020, Thesis: “Resilience for Satisfaction of Temporal Logic Specifications by Dynamical Systems” (now research scientist at Motional)

Zachary Serlin, Mechanical Engineering, 2016 – 2020, Thesis: “Distributed Formal Methods and Sensing for Autonomous Systems” (now technical staff, MIT Lincoln Laboratory)

Xiao Li, Mechanical Engineering, 2015 – 2020, Thesis: “A Formal Methods Approach to Interpretability, Safety and Composability for Reinforcement Learning” (now postdoctoral associate, MIT)

Francisco Penedo, Systems Engineering, 2015 – 2020, Thesis: “Formal Methods for Partial Differential Equations”

Giuseppe Bombara, Electrical and Computer Engineering, 2015 – 2020, Thesis: “Learning Temporal Logic Formulae From Data”

Iman Haghighi, Systems Engineering, 2013 – 2018, Thesis: “Spatio-temporal logics for verification and control of networked systems” (now at Wayfair)

Junmin Wang, Bioinformatics, 2015 – 2018, Thesis: “Mathematical Models and Modular Composition Rules for Synthetic Genetic Circuits” (now at BioGen)

Demarcus Briers, Bioinformatics, 2015 – 2018, Thesis: “Mathematical Modeling for Pattern Formation in Networks of Mammalian Cells” (now at ReviveMed)

Sadra Sadraddini, Mechanical Engineering, 2013 – 2018, Thesis: “Formal Methods for Resilient Control” (now a Postdoctoral Researcher at MIT)

Kevin Leahy, Mechanical Engineering, 2012 – 2016, Thesis: “Multi-Agent Persistent Surveillance under Temporal Logic Constraints” (now at Lincoln Lab, MIT)

Cristian Ioan Vasile, Systems Engineering, 2012 – 2016, Thesis: “Motion Planning and Control: A Formal Methods Approach” (now an Assistant Professor, Lehigh University)

Austin Jones, Systems Engineering, 2011 – May 2015, Thesis: “Formal Methods Paradigms for Estimation and Machine Learning in Dynamical Systems” (now at Lincoln lab, MIT)

Ana Medina Ayala, Mechanical Engineering, 2009 – 2014, Thesis: “Formal methods for Motion Planning and Control in Dynamic and Partially Known Environments” (now at Jibo, Boston)

Igor Cizelj, Systems Engineering, BU, 2009 – 2013, Thesis: “Vehicle Control from Temporal Logic Specifications with Probabilistic Satisfaction Guarantees” (now at AIR Worldwide)

Ebru Aydin Gol, Systems Engineering, 2010 – 2014, Thesis: “Formal Verification and Controller Synthesis for Discrete-Time Systems (now at Google)

Alphan Ulusoy, Systems Engineering, BU, 2010 – 2013, Thesis: “Optimal Temporal Logic Control of Autonomous Vehicles” (now at Mathworks)

Guilhem Richard, Bioinformatics, BU, 2009 – 2013, Thesis: “Affecting the macrophage response to infection by integrating signaling and gene regulatory networks” (now at EpiVax)

Yushan Chen, Electrical and Computer Engineering, BU, 2009 – 2013, Thesis: “Formal Synthesis of Control and Communication Schemes” (now at Orbeus)

Morteza Lahijanian, Mechanical Engineering, BU, 2006 – 2012, Thesis: “Formal Verification and Control of Discrete-Time Stochastic Systems with Applications in Robotics (now an Assistant Professor at the University of Colorado at Boulder)

Boyan Yordanov, Biomedical Engineering, BU, 2006 – 2010, Thesis: “A Formal Framework for Analysis and Design of Synthetic Gene Networks” (now at Microsoft Research, Cambridge, UK)

Marius Kloetzer, Systems Engineering, BU, 2004 – 2008, Thesis: “Symbolic Motion Planning and Control”, (now an Associate Professor at Technical Univ. of Iasi)

POSTDOCTORAL ASSOCIATES

Logan Beaver 2021 – 2023 (now an Assistant Professor at Old Dominion University)

Dogan Ulus 2018-2019 (now at Mitsubishi)

Curtis Madsen 2015 – 2017

Yao Ma 2016 - 2018

Janos Rudan 2015 - 2017

Derya Aksaray 2014 – 2016 (now at MIT)

Chanyeol Yoo, 2014 – 2016 (now at University of Sydney)

Zhaodan Kong, 2012 – 2014 (now an Assistant Professor at University of California, Davis)

Huili Yu, Sept. 2011 – Feb. 2012

Boyan Yordanov, Feb 2011 – Sept. 2011 (now a Researcher at Microsoft Research, Cambridge, UK)

Hyeonjeon Chang, Oct. 2010 - May 2011

Xu Chu (Dennis) Ding, Jan. 2010 – October 2011 (now a Research Engineer at United Technologies Research Center, USA)

Gregory Batt, 2005-2006 (now a Research Scientist at INRIA, France)

VISITING SCIENTISTS

Matthias Rungger, Technical University Munchen, Aug. – Sept. 2015

Majid Zamani, Technical University Munchen, Aug. – Sept. 2015

Damir Haskovic, Vienna University of Technology, March 2015 – August 2015

Erkan Kayacan, University of Leuven (KU Leuven), Feb. 2014 – July. 2014

Vladislav Nenchev, Technical University of Berlin, September 2013 – June 2014

Ilya Kukushkin, Technical University of Vienna, March 2013 – July 2013

Maria Svorenova, Masaryk University, Feb. 2012 – June 2012, October 2013 – February 2014

Mircea Lazar, Eindhoven University of Technology, Apr – Aug. 2011

Jana Tumova, Masaryk University, Oct. 2009 – Feb. 2010, May 2011 – Sept. 2011

SUPERVISION OF MS STUDENTS

Allen Huang, Mechanical Engineering, 2015 - present
Michael Marrazzo, Mechanical Engineering, 2011-2013
Niraj Trivedi, Bioinformatics, BU, 2009 – 2011 (now at NIH)
Joe Wasniewski, Manufacturing Engineering, 2008-2009 (now at Raytheon)
Hongqiang Lou, Systems Engineering, 2007 – 2008
Claudiu Lefter, Systems Engineering, 2005 – 2007
Victor Ma, Electrical and Computer Engineering, 2009-2010 (now a PhD student at EPFL)

SUPERVISION OF UNDERGRADUATE STUDENTS

Konstantinos Oikonomopoulos (2011 – present, Lutchen Fellow Summer 2013)
Peter Ishiguro (Lutchen Fellow Summer 2013)

HIGH SCHOOL STUDENTS

Ripple Patel (Discovery Intern, Summer 2014)
Teddy Ni (RISE Intern, Summer 2014)
Christopher Naughton (RISE Intern, Summer 2013)
Ethan Bradlow (Discovery Intern, Summer 2013)
Matthew Buckley (Christian Brothers Academy, Lincroft, NJ)
Benjamin Bernays (Gant Academy, now at Boston University)
Sara Itani (BU Academy, now at MIT)
Samuel Birch (BU Academy, now at Brown University)

PHD COMMITTEE MEMBERSHIP

Meng Gao (KTH, Sweden, Opponent), Jan 2016
Julia Lima Fleck, Systems Engineering, 2016 (expected)
Yevgeniy Gindin, Bioinformatics, (Committee Chair), 2014
Swati Carr, Bioinformatics
Yanfeng Geng, Systems Engineering
Sylvanus Lee, Mechanical Engineering (Committee Chair)
Hanieh Mirzaei, Systems Engineering
Elham Azizi, Bioinformatics
Graham Rockwell, Bioinformatics
Jonathan Dreyfuss, Bioinformatics
Amrita Kar, Bioinformatics
David Byrne, Bioinformatics (Committee Chair)
Chris Jacobs, Bioinformatics (Committee Chair)
Na Sun, Systems Engineering
Ed Reznik, Bioinformatics
Yingwei Lin, Systems Engineering

Niels Klitgort, Bioinformatics, Apr 2011 (Committee Chair)
Bill Riehl, Bioinformatics, Mar 2011
Hsuan-Chao Chiu, Bioinformatics, 2011
Varun Mazumdar, Bioinformatics, 2011
Reza Moazzez Estanjini, Systems Engineering, 2011

IN THE MEDIA

IEEE Spectrum: These robots are learning to cook hotdogs,
<https://spectrum.ieee.org/automaton/robotics/robotics-hardware/video-friday-22120>
Feb 21, 2020

Futurity: [Watch 2 robots work together to make a hot dog](#) , Feb 20, 2020

Futurism: [This Hot Dog Cooking Robot Is The Beginning Of The End](#) Feb 20, 2020

BU Today: “Meet Jaco and Baxter, Machine Learning Robots Who Cook Perfect Hot Dogs”,
Feb. 18, 2020
<http://www.bu.edu/articles/2020/machine-learning-robots-who-cook-hot-dogs/>

Singularity Hub: “How Two Robots Learned to Grill and Serve the Perfect Hot Dog”, Dec. 19, 2019
<https://singularityhub.com/2019/12/19/how-two-robots-learned-to-grill-and-serve-hot-dogs/>

Inverse: “This self-aware robot can cook and serve hot dogs”, Dec. 19, 2019,
<https://www.inverse.com/article/61754-robot-hot-dogs-fast-food>

Boston University Engineering Spotlight Research: “Robot Reinforcement”, Dec. 19, 2019,
<http://www.bu.edu/eng/2019/12/19/robot-reinforcement/>

Gladstone Institutes News: “Machine, meet stem cells”, Nov. 20, 2019,
<https://gladstone.org/about-us/news/machine-meet-stem-cells>

New Scientist: “Future delivery drones start learning how to fly on their own”, January 16, 2016
<https://www.newscientist.com/article/2075364-future-delivery-drones-start-learning-how-to-fly-on-their-own>

National Science Foundation News: “Exploring a new frontier of cyber-physical systems: The human body”, May 12, 2015
http://nsf.gov/news/news_summ.jsp?cntn_id=135105&org=NSF&from=news

BU College of Engineering News: “A Robotic Approach to Engineering Living Cells”, May 12, 2015
<http://www.bu.edu/phpbin/news-cms/news/?dept=666&id=62547>

BU Today: “Life is Sweet”, December 3, 2012
<http://www.bu.edu/today/2012/life-is-suite/>

Discovery News: “Batcopter Flies Among Nocturnal Colonies”, June 15, 2011
<http://news.discovery.com/tech/batcopter-flies-among-nocturnal-colonies-110615.html>

Discover Magazine: “DIY “Batcopter” Flies with Bats, Scares the Pants Off Them For Science”, June 14, 2011

<http://blogs.discovermagazine.com/discoblog/2011/06/17/diy-batcopter-flies-with-bats-scares-the-pants-off-them-for-science/>,

IEEE Spectrum: “Batcopter Does High-Tech Robotic Bat Harassment for Science”

<http://spectrum.ieee.org/automaton/robotics/diy/batcopter-does-hightech-robotic-bat-harassment-for-science>, June 14, 2011

Popular Science: “Batcopter Flies Along With Bat Swarms, Helping Researchers Study Bat Behavior Up Close”

<http://www.popsci.com/technology/article/2011-06/batcopter-flies-bat-swarms-helping-researchers-study-bat-flight-patterns>, June 15, 2011

Channel 5 Evening News: “Could Robot Soon Replace Your Job?”

<http://www.thebostonchannel.com/money/27404150/detail.html>, April 2011

ScienceDaily: “Cancer-Metabolism Link Runs Deep in Humans, Novel Network Algorithm Suggests”

<http://www.sciencedaily.com/releases/2010/07/100721154238.html>, July 23, 2010

Before It’s News: “Cancer-Metabolism Link Runs Deep In Humans Say Researchers”,

http://beforeitsnews.com/story/109/618/Cancer-Metabolism_Link_Runs_Deep_In_Humans_Say_Researchers.html, July 21, 2010

MIT Technology Review: Cutting-Edge Robots Show Off in Japan, May 2009

<http://www.technologyreview.com/computing/22635/page2/>

ACADEMIC REFERENCES

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