Murat Arcak

List of Publications by Year in Descending Order

168 papers	4,373 citations	32 h-index	63 g-index
193 ext. papers	5,476 ext. citations	3.9 avg, IF	6.16 L-index

#	Paper	IF	Citations
168	Compositional Analysis of Interconnected Systems Using Delta Dissipativity **2022**, 6, 662-667		
167	Monotonicity-Based Symbolic Control for Safety in Driving Scenarios **2022**, 6, 830-835		
166	Imitation Learning With Stability and Safety Guarantees **2022**, 6, 409-414		5
165	Backward Reachability Using Integral Quadratic Constraints for Uncertain Nonlinear Systems **2021**, 5, 707-712		2
164	Dissipativity Tools for Convergence to Nash Equilibria in Population Games. *IEEE Transactions on Control of Network Systems*, **2021**, 8, 39-50	4	7
163	Abstraction-Based Control Synthesis. *Springer Briefs in Electrical and Computer Engineering*, **2021**, 93-101	0.4	1
162	Backward Reachability for Polynomial Systems on A Finite Horizon. *IEEE Transactions on Automatic Control*, **2021**, 1-1	5.9	3
161	Stability Analysis using Quadratic Constraints for Systems with Neural Network Controllers. *IEEE Transactions on Automatic Control*, **2021**, 1-1	5.9	3
160	Mixed Monotonicity. *Springer Briefs in Electrical and Computer Engineering*, **2021**, 33-41	0.4	
159	Sampled-Data Mixed Monotonicity. *Springer Briefs in Electrical and Computer Engineering*, **2021**, 43-59	0.4	
158	An Efficient Algorithm to Compute Norms for Finite Horizon, Linear Time-Varying Systems **2021**, 5, 1597-1602	0	
157	Computing Worst-Case Disturbances for Finite-Horizon Linear Time-Varying Approximations of Uncertain Systems **2021**, 5, 1753-1758		
156	Measure of Robustness Against Parameter Uncertainty. *Springer Briefs in Electrical and Computer Engineering*, **2021**, 87-92	0.4	
155	Approximate abstractions of control systems with an application to aggregation. *Automatica*, **2020**, 119, 109065	5.7	0
154	Cell-in-the-loop pattern formation with optogenetically emulated cell-to-cell signaling. *Nature Communications*, **2020**, 11, 1355	17.4	19
153	Reachability analysis using dissipation inequalities for uncertain nonlinear systems. *Systems and Control Letters*, **2020**, 142, 104736	2.4	3
152	Interval Reachability Analysis using Second-Order Sensitivity. *IFAC-PapersOnLine*, **2020**, 53, 1825-1830	0.7	

151	Continuous and discrete abstractions for planning, applied to ship docking. *IFAC-PapersOnLine*, **2020**, 53, 1831-1836	0.7	1
150	PIRK: Scalable Interval Reachability Analysis for High-Dimensional Nonlinear Systems. *Lecture Notes in Computer Science*, **2020**, 556-568	0.9	3
149	Robust Control of the Sit-to-Stand Movement for a Powered Lower Limb Orthosis. *IEEE Transactions on Control Systems Technology*, **2020**, 28, 2390-2403	4.8	7
148	Improving Urban Traffic Throughput With Vehicle Platooning: Theory and Experiments. *IEEE Access*, **2020**, 8, 141208-141223	3.5	9
147	Data-Driven Reachable Set Computation using Adaptive Gaussian Process Classification and Monte Carlo Methods **2020**,		4
146	Cooperative Control for Multirotors Transporting an Unknown Suspended Load Under Environmental Disturbances. *IEEE Transactions on Control Systems Technology*, **2020**, 28, 653-660	4.8	28
145	A Spatial Filtering Approach to Biological Patterning. *SIAM Journal on Applied Dynamical Systems*, **2019**, 18, 1694-1721	2.8	
144	TIRA **2019**,		18
143	Flexible Computational Pipelines for Robust Abstraction-Based Control Synthesis. *Lecture Notes in Computer Science*, **2019**, 591-608	0.9	
142	Continuous Abstraction of Nonlinear Systems using Sum-of-Squares Programming **2019**,		4
141	Finite Horizon Backward Reachability Analysis and Control Synthesis for Uncertain Nonlinear Systems **2019**,		4
140	Editorial to the Special Issue of L-CSS on Control and Network Theory for Biological Systems **2019**, 3, 228-229		3
139	Finite horizon robustness analysis of LTV systems using integral quadratic constraints. *Automatica*, **2019**, 100, 135-143	5.7	23
138	Designing Spatially Distributed Gene Regulatory Networks To Elicit Contrasting Patterns. *ACS Synthetic Biology*, **2019**, 8, 119-126	5.7	4
137	Transformation of Optimal Centralized Controllers Into Near-Globally Optimal Static Distributed Controllers. *IEEE Transactions on Automatic Control*, **2019**, 64, 66-80	5.9	11
136	Major Computational Breakthroughs in the Synthesis of Symbolic Controllers via Decomposed Algorithms **2018**,		1
135	Exploiting symmetry for discrete-time reachability computations **2018**, 2, 213-217		5
134	. *IEEE Transactions on Control of Network Systems*, **2018**, 5, 525-535	4	6

#	Reference		
133	Compositional Abstraction for Networks of Control Systems: A Dissipativity Approach. *IEEE Transactions on Control of Network Systems*, **2018**, 5, 1003-1015	4	20
132	Pattern Formation over Multigraphs. *IEEE Transactions on Network Science and Engineering*, **2018**, 5, 55-64	4.9	1
131	Constructing Control System Abstractions from Modular Components **2018**,		10
130	Finite Time Robust Control of the Sit-to-Stand Movement for Powered Lower Limb Orthoses **2018**,		2
129	Hierarchical Control via an Approximate Aggregate Manifold **2018**,		2
128	Control and Optimization Problems in Hyperpolarized Carbon-13 MRI. *Lecture Notes in Control and Information Sciences - Proceedings*, **2018**, 29-40	0.2	
127	Simulation-Based Reachability Analysis for Nonlinear Systems Using Componentwise Contraction Properties. *Lecture Notes in Computer Science*, **2018**, 61-76	0.9	5
126	Reachability Analysis for Robustness Evaluation of the Sit-to-Stand Movement for Powered Lower Limb Orthoses **2018**,		2
125	Spatio-Temporally Constrained Reconstruction for Hyperpolarized Carbon-13 MRI Using Kinetic Models. *IEEE Transactions on Medical Imaging*, **2018**, 37, 2603-2612	11.7	5
124	Investigation of analysis methods for hyperpolarized 13C-pyruvate metabolic MRI in prostate cancer patients. *NMR in Biomedicine*, **2018**, 31, e3997	4.4	44
123	Symmetry reduction for dynamic programming. *Automatica*, **2018**, 97, 367-375	5.7	4
122	Sampled-Data Reachability Analysis Using Sensitivity and Mixed-Monotonicity **2018**, 2, 761-766		13
121	Offset optimization in signalized traffic networks via semidefinite relaxation. *Transportation Research Part B: Methodological*, **2017**, 100, 82-92	7.2	12
120	An Input-Output Framework for Submanifold Stabilization. *IEEE Transactions on Automatic Control*, **2017**, 62, 5170-5184	5.9	
119	Symbolic control design for monotone systems with directed specifications. *Automatica*, **2017**, 83, 10-19	5.7	12
118	Formal Methods for Control of Traffic Flow: Automated Control Synthesis from Finite-State Transition Models. *IEEE Control Systems*, **2017**, 37, 109-128	2.9	14
117	Symmetry reduction for dynamic programming and application to MRI **2017**,		2
116	A Tug-of-War Mechanism for Pattern Formation in a Genetic Network. *ACS Synthetic Biology*, **2017**, 6, 2056-2066	5.7	3

115	Motion Planning of the Sit to Stand Movement for Powered Lower Limb Orthoses **2017**,		2
114	A Small Gain Theorem for Parametric Assume-Guarantee Contracts **2017**,		8
113	Finite abstraction of mixed monotone systems with discrete and continuous inputs. *Nonlinear Analysis: Hybrid Systems*, **2017**, 23, 254-271	4.5	9
112	Passivity-based Formation Control for UAVs with a Suspended Load. *IFAC-PapersOnLine*, **2017**, 50, 13150-13155	0.7	17
111	Pattern Formation in Large-Scale Networks with Asymmetric Connections. *IFAC-PapersOnLine*, **2017**, 50, 10944-10949	0.7	
110	Dynamic contracts for distributed temporal logic control of traffic networks **2017**,		8
109	A scalable method for designing distributed controllers for systems with unknown initial states **2017**,		1
108	**2017**,		7
107	Offset optimization of signalized intersections via the Burer-Monteiro method **2017**,		3
106	Optimizing Flip Angles for Metabolic Rate Estimation in Hyperpolarized Carbon-13 MRI. *IEEE Transactions on Medical Imaging*, **2016**, 35, 2403-2412	11.7	24
105	Stability of traffic flow networks with a polytree topology. *Automatica*, **2016**, 66, 246-253	5.7	24
104	Stability of an analog optimization circuit for quadratic programming. *Systems and Control Letters*, **2016**, 88, 68-74	2.4	12
103	Traffic Network Control From Temporal Logic Specifications. *IEEE Transactions on Control of Network Systems*, **2016**, 3, 162-172	4	28
102	Modular Synthetic Inverters from Zinc Finger Proteins and Small RNAs. *PLoS ONE*, **2016**, 11, e0149483	3.7	6
101	Comparison to Other Input/Output Approaches. *Springer Briefs in Electrical and Computer Engineering*, **2016**, 73-81	0.4	
100	Dissipativity with Dynamic Supply Rates. *Springer Briefs in Electrical and Computer Engineering*, **2016**, 63-72	0.4	1
99	Stability of Interconnected Systems. *Springer Briefs in Electrical and Computer Engineering*, **2016**, 13-21	0.4	
98	Mixed monotonicity of partial first-in-first-out traffic flow models **2016**,		12

97	Semidefinite relaxations in optimal experiment design with application to substrate injection for hyperpolarized MRI **2016**,		6
96	Symmetric Monotone Embedding of Traffic Flow Networks with First-In-First-Out Dynamics. *IFAC-PapersOnLine*, **2016**, 49, 642-647	0.7	1
95	Parallel dynamic programming for optimal experiment design in nonlinear systems **2016**,		6
94	Networks of Dissipative Systems. *Springer Briefs in Electrical and Computer Engineering*, **2016**,	0.4	26
93	Reachability Analysis of Nonlinear Systems Using Matrix Measures. *IEEE Transactions on Automatic Control*, **2015**, 60, 265-270	5.9	35
92	Decoupling translational and rotational effects on the phase synchronization of rotating helices. *Physical Review E*, **2015**, 91, 023018	2.4	1
91	A Compartmental Model for Traffic Networks and Its Dynamical Behavior. *IEEE Transactions on Automatic Control*, **2015**, 60, 2698-2703	5.9	40
90	Compositional performance certification of interconnected systems using ADMM. *Automatica*, **2015**, 61, 55-63	5.7	16
89	Efficient finite abstraction of mixed monotone systems **2015**,		47
88	Adaptive Synchronization of Diffusively Coupled Systems. *IEEE Transactions on Control of Network Systems*, **2015**, 2, 131-141	4	11
87	A Dissipativity Approach to Safety Verification for Interconnected Systems. *IEEE Transactions on Automatic Control*, **2015**, 60, 1722-1727	5.9	24
86	Compositional controller synthesis for vehicular traffic networks **2015**,		26
85	Controlling a network of signalized intersections from temporal logical specifications **2015**,		7
84	A Compartmental Lateral Inhibition System to Generate Contrasting Patterns. *IEEE Life Sciences Letters*, **2015**, 1, 7-10		
83	Optimal experiment design for physiological parameter estimation using hyperpolarized carbon-13 magnetic resonance imaging **2015**,		7
82	A computational approach to synthesizing guards for hybrid systems. *Systems and Control Letters*, **2014**, 73, 25-32	2.4	1
81	Dynamical properties of a compartmental model for traffic networks **2014**,		17
80	Freeway traffic control from linear temporal logic specifications **2014**,		13

79	Performance certification of interconnected nonlinear systems using ADMM **2014**,		3
78	Trajectory-based reachability analysis of switched nonlinear systems using matrix measures **2014**,		2
77	A GRAPH PARTITIONING APPROACH TO PREDICTING PATTERNS IN LATERAL INHIBITION SYSTEMS. *SIAM Journal on Applied Dynamical Systems*, **2013**, 12, 2012-2031	2.8	10
76	Synchronization of diffusively-coupled limit cycle oscillators. *Automatica*, **2013**, 49, 3613-3622	5.7	13
75	Delay Robustness of Interconnected Passive Systems: An Integral Quadratic Constraint Approach. *IEEE Transactions on Automatic Control*, **2013**, 58, 712-724	5.9	15
74	Pattern Formation by Lateral Inhibition in Large-Scale Networks of Cells. *IEEE Transactions on Automatic Control*, **2013**, 58, 1250-1262	5.9	22
73	Synchronization of limit cycle oscillations in diffusively-coupled systems **2013**,		4
72	Spatial uniformity in diffusively-coupled systems using weighted L2 norm contractions **2013**,		3
71	Verifying safety of interconnected passive systems using SOS programming **2013**,		1
70	Scaling the size of a formation using relative position feedback. *Automatica*, **2012**, 48, 2677-2685	5.7	49
69	Stability certification of large scale stochastic systems using dissipativity. *Automatica*, **2012**, 48, 2956-2964	5.7	12
68	Guard synthesis for safety of hybrid systems using sum of squares programming **2012**,		3
67	Graph Weight Allocation to Meet Laplacian Spectral Constraints. *IEEE Transactions on Automatic Control*, **2012**, 57, 1872-1877	5.9	17
66	Quaternion-Based Hybrid Feedback for Robust Global Attitude Synchronization. *IEEE Transactions on Automatic Control*, **2012**, 57, 2122-2127	5.9	42
65	A feedback quenched oscillator produces turing patterning with one diffuser. *PLoS Computational Biology*, **2012**, 8, e1002331	5	23
64	Formation control with size scaling using relative displacement feedback **2012**,		3
63	New architecture for patterning gene expression using zinc finger proteins and small RNAs **2012**,		2
62	Synchronization and pattern formation in diffusively coupled systems **2012**,		7

#	Reference	IF	Cit.
61	Scaling the size of a multiagent formation via distributed feedback **2011**,		5
60	. *IEEE Transactions on Automatic Control*, **2011**, 56, 2766-2777	5.9	27
59	Equilibrium-independent passivity: A new definition and numerical certification. *Automatica*, **2011**, 47, 1949-1956	5.7	57
58	Certifying spatially uniform behavior in reaction‐diffusion PDE and compartmental ODE systems. *Automatica*, **2011**, 47, 1219-1229	5.7	48
57	Graph weight design for Laplacian eigenvalue constraints with multi-agent systems applications **2011**,		4
56	A quenched oscillator network for pattern formation in gene expression **2011**,		4
55	On spatially uniform behavior in reaction-diffusion systems **2010**,		1
54	Nonlinear analysis of ring oscillator circuits **2010**,		1
53	Equilibrium-independent passivity: a new definition and implications **2010**,		1
52	Robust global asymptotic attitude synchronization by hybrid control **2010**,		3
51	Synchronization of Interconnected Systems With Applications to Biochemical Networks: An Input-Output Approach. *IEEE Transactions on Automatic Control*, **2010**, 55, 1367-1379	5.9	135
50	**2010**,		1
49	Instability Mechanisms in Cooperative Control. *IEEE Transactions on Automatic Control*, **2010**, 55, 258-263	5.9	13
48	In situ detection of anode flooding of a PEM fuel cell. *International Journal of Hydrogen Energy*, **2009**, 34, 6765-6770	6.7	41
47	A sufficient condition for additive -stability and application to reaction‐diffusion models. *Systems and Control Letters*, **2009**, 58, 736-741	2.4	8
46	Real-time optimization of net power in a fuel cell system. *Journal of Power Sources*, **2009**, 187, 422-430	8.9	12
45	Time-scale separation redesigns for stabilization and performance recovery of uncertain nonlinear systems. *Automatica*, **2009**, 45, 34-44	5.7	53
44	Adaptive motion coordination: Using relative velocity feedback to track a reference velocity. *Automatica*, **2009**, 45, 1020-1025	5.7	75

43	Robust Stabilization and Performance Recovery of Nonlinear Systems With Unmodeled Dynamics. *IEEE Transactions on Automatic Control*, **2009**, 54, 1351-1356	5.9	19
42	Estimation of Radial Power System Transfer Path Dynamic Parameters Using Synchronized Phasor Data. *IEEE Transactions on Power Systems*, **2008**, 23, 564-571	7	37
41	Robust stabilization and performance recovery of nonlinear systems with input unmodeled dynamics **2008**,		1
40	A Passivity-Based Approach to Stability of Spatially Distributed Systems With a Cyclic Interconnection Structure. *IEEE Transactions on Automatic Control*, **2008**, 53, 75-86	5.9	24
39	Adaptive design for reference velocity recovery in motion coordination. *Systems and Control Letters* , **2008**, 57, 602-610	2.4	72
38	Area aggregation and time-scale modeling for sparse nonlinear networks. *Systems and Control Letters*, **2008**, 57, 142-149	2.4	32
37	Rigid body attitude coordination without inertial frame information. *Automatica*, **2008**, 44, 3170-3175	5.7	112
36	Using electrochemical impedance to determine airflow rates. *International Journal of Hydrogen Energy*, **2008**, 33, 4694-4701	6.7	11
35	Gradient climbing in formation via extremum seeking and passivity-based coordination rules. *Asian Journal of Control*, **2008**, 10, 201-211	1.7	25
34	A passivity-based stability criterion for a class of biochemical reaction networks. *Mathematical Biosciences and Engineering*, **2008**, 5, 1-19	2.1	85
33	A Three-time-scale redesign for robust stabilization and performance recovery of nonlinear systems with input uncertainties **2007**,		2
32	Synchronized Phasor Data Based Energy Function Analysis of Dominant Power Transfer Paths in Large Power Systems. *IEEE Transactions on Power Systems*, **2007**, 22, 727-734	7	57
31	Passivity-based designs for synchronized path-following. *Automatica*, **2007**, 43, 1508-1518	5.7	166
30	A Two-Time-Scale Redesign for Robust Stabilization and Performance Recovery of Uncertain Nonlinear Systems. *Proceedings of the American Control Conference*, **2007**,	1.2	13
29	Remarks on the stability of spatially distributed systems with a cyclic interconnection structure. *Proceedings of the American Control Conference*, **2007**,	1.2	3
28	A decentralized design for group alignment and synchronous rotation without inertial frame information **2007**,		5
27	Group Coordination when the Reference Velocity is Available Only to the Leader: An Adaptive Design. *Proceedings of the American Control Conference*, **2007**,	1.2	3
26	Gradient climbing in formation via extremum seeking and passivity-based coordination rules **2007**,		33

25	Passivity as a Design Tool for Group Coordination. *IEEE Transactions on Automatic Control*, **2007**, 52, 1380-1390	5.9	501
24	A passivity-based stability criterion for a class of interconnected systems and applications to biochemical reaction networks **2007**,		8
23	Area Aggregation and Time Scale Modeling for Sparse Nonlinear Networks **2006**,		3
22	Passivity-Based Designs for Synchronized Path Following **2006**,		14
21	. *IEEE/ACM Transactions on Networking*, **2006**, 14, 1313-1322	3.8	3
20	Diagonal stability of a class of cyclic systems and its connection with the secant criterion. *Automatica*, **2006**, 42, 1531-1537	5.7	150
19	An algorithm for estimation of membrane water content in PEM fuel cells. *Journal of Power Sources* , **2006**, 157, 389-394	8.9	53
18	A hybrid redesign of Newton observers in the absence of an exact discrete-time model. *Systems and Control Letters*, **2006**, 55, 429-436	2.4	23
17	Observer designs for fuel processing reactors in fuel cell power systems. *International Journal of Hydrogen Energy*, **2005**, 30, 447-457	6.7	28
16	Robustness of network flow control against disturbances and time-delay. *Systems and Control Letters*, **2004**, 53, 13-29	2.4	27
15	A relaxed condition for stability of nonlinear observer-based controllers. *Systems and Control Letters*, **2004**, 53, 311-320	2.4	22
14	A framework for nonlinear sampled-data observer design via approximate discrete-time models and emulation. *Automatica*, **2004**, 40, 1931-1938	5.7	137
13	Feedback tuning of bifurcations. *Systems and Control Letters*, **2003**, 50, 229-239	2.4	17
12	Observer design for systems with multivariable monotone nonlinearities. *Systems and Control Letters*, **2003**, 50, 319-330	2.4	158
11	Circle and Popov criteria as tools for nonlinear feedback design. *Automatica*, **2003**, 39, 643-650	5.7	64
10	Input-to-state stability for a class of Lurie systems. *Automatica*, **2002**, 38, 1945-1949	5.7	62
9	Boundedness without Absolute Stability in Systems with Stiffening Nonlinearities. *European Journal of Control*, **2002**, 8, 243-250	2.5	13
8	Feasibility conditions for circle criterion designs. *Systems and Control Letters*, **2001**, 42, 405-412	2.4	35

List of Publications

7	Redesign of backstepping for robustness against unmodelled dynamics. *International Journal of Robust and Nonlinear Control*, **2001**, 11, 633-643	3.6	4
6	Constructive nonlinear control: a historical perspective. *Automatica*, **2001**, 37, 637-662	5.7	450
5	Nonlinear observers: a circle criterion design and robustness analysis. *Automatica*, **2001**, 37, 1923-1930	5.7	311
4	Robust nonlinear control of feedforward systems with unmodeled dynamics. *Automatica*, **2001**, 37, 265-272	5.7	59
3	Robust nonlinear control of systems with input unmodeled dynamics. *Systems and Control Letters*, **2000**, 41, 115-122	2.4	34
2	Automatic Generation of Communication Requirements for Enforcing Multi-Agent Safety. *Electronic Proceedings in Theoretical Computer Science, EPTCS*,269, 3-16		
1	Cell-in-the-loop pattern formation with optogenetically emulated cell-to-cell signaling		1