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# TABLE OF CONTENTS

On the Instability of Nesterov's ODE under Non-Conservative Vector Fields ..... 1
*Daniel E. Ochoa, Mahmoud Abdelgalil, Jorge I. Poveda*

Reformulations of Quadratic Programs for Lipschitz Continuity ..... 7
*Devansh R. Agrawal, Haejoon Lee, Dimitra Panagou*

Observability and State Estimation for Smooth and Nonsmooth Differential Algebraic Equation Systems ..... 13
*Hesham Abdelfattah, Sameh A. Eisa, Peter Stechlinski*

Robust Position Tracking Control of Electro-Hydraulic Actuators: Elimination of Velocity Measurements ..... 19
*Sule Taskingollu, Alper Bayrak, Erman Selim, Enver Tatlicioglu, Erkan Zergeroglu*

Policy Gradient Bounds in Multitask LQR ..... 25
*Charis Stamouli, Leonardo F. Toso, Anastasios Tsiamis, George J. Pappas, James Anderson*

A Switched Adaptive Control Approach to Reduce Sensing Needs in Trajectory Tracking Problems ..... 31
*Muzaffar Qureshi, Tochukwu E. Ogri, Humberto Ramos, Wanjiku A. Makumi, Zachary I. Bell Rushikesh Kamalapurkar*

Exploring Chebyshev Spectral Method with Quantum Annealing via Carleman Linearization ..... 37
*Hieu Trung Nguyen, Anh Phuong Ngo*

Safe Bayesian optimization across noise models via scenario programming ..... 43
*Abdullah Tokmak, Thomas B. Schön, Dominik Baumann*

Choice Paralysis in Evolutionary Games ..... 49
*Brendon G. Anderson*

Guaranteed Privacy-Preserving Control of Discrete-Time Systems ..... 55
*Mohammad Khajenejad*

Strategic Concealment of Environment Representations in Competitive Games ..... 61
*Yue Guan, Dipankar Maity, Panagiotis Tsiotras*

Topology-Control-based Moving Target Defense against False Data Injection in Distribution Networks ..... 67
*Lei Ding, Chengnian Long, Jing Wu*

Reach-Avoid Games in a Grid World ..... 73
*James Berneburg, Michael Dorothy, Daigo Shishika*

Data Informativity for Analysis and Design of Positive Systems ..... 79
*Takumi Iwata, Shun-Ichi Azuma, Masaaki Nagahara, Dimitri Peaucelle, Yoshio Ebihara*

Stability of Relaxed Barrier Function-Based Model Predictive Control With Hard Input Constraints ..... 85
*Miguel Castroviejo-Fernandez, Jordan Leung*

Scalable and Modular Control Framework for Managing Active Cell Balancing Challenges ..... 91
*Afaq Ahmed, Ali Arshad Uppal, Qadeer Ahmed*

Shrinking Horizon MPC for Safe Multi-Spacecraft Capture of a Non-Cooperative Target ..... 97
*Taehyeun Kim, Anouck Girard, Ilya Kolmanovsky*

Arbitration with Control Barrier Functions for Safe Shared Control ..... 103
*M. Yusuf Uzun, Yildiray Yildiz*

Design and Modeling of Engineered Self-Organized Bacterial Colonies Exhibiting Substance-Responsive Pattern Perturbations ..... 109
*Shai Bleu Bernard, Michaëlle N. Mayalu*

Robust Model Predictive Control for Spacecraft Rendezvous under Sector-Bounded Nonlinearities ..... 115
*Ákos M. Bokor, Felix Biertümpfel, Peter Seiler, Roland Tóth*

Nash Q-Learning with Inferring Causal Signal Temporal Logic: A Study of Competitive Multi-Agent Systems ..... 121
*Hadi Partovi Aria, Zhe Xu*

Connectivity-Preserving Multi-Agent Area Coverage via Optimal-Transport-Based Density-Driven Optimal Control ($D^2OC$) ..... 127
*Kooktae Lee, Ethan Brook*

Design of Input-Output Observers for a Population of Systems with Bounded Frequency-Domain Variation using DK-iteration ..... 133
*Timothy Everett Adams, James Richard Forbes*

Optimal Multimarginal Schrödinger Bridge: Minimum Spanning Tree over Measure-valued Vertices ..... 139
*Georgiy A. Bondar, Abhishek Halder*

Fairness-aware Management of Electric Vehicle Charging Stations ..... 145
*Paulo Bessa Do Rego Monteiro, Chase Williams, Joseph Moyalan, YangQuan Chen, Ricardo de Castro*

Constrained Variational Inference via Safe Particle Flow ..... 151
*Yinzhuang Yi, Jorge Cortés, Nikolay Atanasov*

Online Optimization on Hadamard Manifolds: Curvature-Independent Regret Bounds on Horospherically Convex Objectives ..... 157
*Emre Sahinoglu, Shahin Shahrampour*

Safe Navigation in the Presence of Range-Limited Pursuers ..... 163
*Thomas Chapman, Alexander Von Moll, Isaac E. Weintraub*

A Class of Axis–Angle Attitude Control Laws for Rotational Systems ..... 169
*Francisco M. F. R. Gonçalves, Ryan M. Bena, Néstor O. Pérez-Arancibia*

Tube-Based MPC for Uncertain Sampled-Data Control Systems with Inter-Sample Reachability Analysis ..... 175
*Yang Zhao, Elikplim Gah, Sze Zheng Yong*

Statistically Consistent Approximate Model Predictive Control ..... 181
*E. Milios, K. P. Wabersich, F. Berkel, F. Gruber, M. N. Zeilinger*

Log-Linear Learning for Coordination with Heterogeneous Bounded Rationalities ..... 187
*Fat-Hy O. Rajab, Olugbenga M. Anubi, Marcos M. Vasconcelos*

A Linear Programming Framework for Optimal Event-Triggered LQG Control ..... 193
*Zahra Hashemi, Dipankar Maity*

Data-driven balancing formulation for linear systems with quadratic outputs ..... 199
*Reetish Padhi, Ion Victor Gosea, Igor Pontes Duff, Serkan Gugercin*

Convergence Analysis of Repeated Optimization in Performative Prediction ..... 205
*Siqi Du, Heling Zhang, Roy Dong*

Safety-Certified Planning and Control in Dynamic Environments via Model Predictive Control ..... 211
*Marjan Khaledi, Bahare Kiumarsi*

Symptom-Driven Personalized Proton Pump Inhibitors Therapy Using Bayesian Neural Networks and Model Predictive Control ..... 217
*Yutong Li, Ilya Kolmanovsky*

Trajectory Tracking with Reachability-Guided Quadratic Programming and Freeze-Resume ..... 223
*Hossein Gholampour, Logan E. Beaver*

Data-Driven Robust Control Under Input-Output Stealthy Attacks ..... 229
*Arijit Bhowmik, Shaunak D. Bopardikar, João P. Hespanha*

Learning-Based Shrinking Disturbance-Invariant Tubes for State- and Input-Dependent Uncertainty ..... 235
*Abdelrahman Ramadan, Sidney Givigi*

A Generalized Potential Game Approach of UAV Swarm Coordination for Hidden Target Localization ..... 241
*Mathis Guckert, Helénè Le Cadre, Jean Le Hénaff*

Logarithmic Regret and Polynomial Scaling in Online Multi-step-ahead Prediction ..... 247
*Jiachen Qian, Yang Zheng*

A New Parametric Uncertainty Approach to Systems with Time-Varying Delay and Feedback Stabilization ..... 253
*Aleksandr Talitckii, Eduardo S. Tognetti, Peter Seiler, Matthew M. Peet*

Target Defense Using a Turret and Mobile Defender Team ..... 259
*Alexander Von Moll, Dipankar Maity, Meir Pachter, Daigo Shishika, Michael Dorothy*

Echo State Network Controller Design for a Class of Leaky-Integrator Nonlinear Systems ..... 265
*Hao Deng, Cristina Stoica, Daniel Ossmann, Mohammed Chadli*

Planar Juggling of a Devil-Stick Using Discrete VHCs ..... 271
*Aakash Khandelwal, Ranjan Mukherjee*

Computing Control Directions of Continuous-Time Nonlinear Systems with Disturbances* ..... 277
*Frédéric Mazenc, Michael Malisoff*

Training Task Reasoning LLM Agents for Multi-turn Task Planning via Single-turn Reinforcement Learning ..... 283
*Hanjiang Hu, Changliu Liu, Na Li, Yebin Wang*

Identification of Hypergraph Dynamics via Physics-Informed Neural Networks ..... 289
*Xin Mao, Anqi Dong, Can Chen*

Combinatorial Control Barrier Functions: Nested Boolean and p-choose-r Compositions of Safety Constraints ..... 295
*Pio Ong, Haejoon Lee, Tamas G. Molnar, Dimitra Panagou, Aaron D. Ames*

Existence and uniqueness of the solution to a class of Fredholm Integral Equations related to Difference Equations ..... 301
*Delphine Bresch-Pietri, Jean Auriol*

State-Constrained Online Adaptive Control for Robotic Manipulators ..... 307
*Ritirupa Dey, Avimanyu Sahoo, Vignesh Narayanan*

Gain-Scheduled Data-Enabled Predictive Control: A DeePC Approach for Nonlinear Systems ..... 313
*Margarita A. Guerrero, Braghadeesh Lakshminarayanan, Cristian R. Rojas*

Goal-Reaching Control Synthesis for Neural Network Control Systems via Backward Reachability ..... 319
*Hang Zhang, Abigail J. Winn, Yuhao Zhang, Xiangru Xu*

Large-Scale Network Utility Maximization via GPU-Accelerated Proximal Message Passing ..... 325
*Akshay Sreekumar, Anthony Degleris, Ram Rajagopal*

Unconditional Exponential Stability via Discontinuous Interface Control Design in Wave Transmission Networks with Inertial Boundary ..... 331
*Mohammad Akil, Zoe Brown, Ahmet Özkan Özer*

From Vertices to Convex Hulls: Certifying Set-Wise Compatibility for CBF Constraints ..... 337
*Shima Sadat Mousavi, Xiao Tan, Aaron D. Ames*

Optimism as Risk-Seeking in Multi-Agent Reinforcement Learning ..... 343
*Runyu Zhang, Na Li, Asuman Ozdaglar, Jeff Shamma, Gioele Zardini*

Dynamics-Augmented Reinforcement Learning for Partially Measurable Nonlinear Systems ..... 349
*Aditya Satish Patil, Zongxuan Sun, Kenneth Kim, Chol-Bum Mike Kweon*

Learning Constraints from Stochastic Partially-Observed Closed-Loop Demonstrations ..... 355
*Chih-Yuan Chiu, Zhouyu Zhang, Glen Chou*

Robust Data-Driven Receding-Horizon Control for LQR with Input Constraints ..... 361
*Jian Zheng, Mario Sznaier*

Global Asymptotic Stability Certificates for Discrete-Time Lur'e Systems under Incremental-like Restrictions ..... 367
*Gioia Montana, Andrea Cristofaro, Mattia Mattioni, Giorgio Valmorbida*

Quantum-Assisted Barrier Sequential Quadratic Programming for Nonlinear Optimal Control ..... 373
*Nahid Binandeh Dehaghani, Rafal Wisniewski, A. Pedro Aguiar*

Certifying the Nonexistence of Feasible Paths Between Power System Operating Points ..... 379
*Mohammad Rasoul Narimani, Katherine R. Davis, Daniel K. Molzahn*

Concurrent Learning for System Identification and Control Using Lyapunov-Based Deep Neural Networks ..... 386
*Rebecca G. Hart, Omkar Sudhir Patil, Zachary I. Bell, Warren E. Dixon*

Modeling Adaptive Tracking of Predictable Stimuli in Electric Fish ..... 392
*Yu Yang, Andreas Oliveira, Louis L. Whitcomb, Felipe Pait, Mario Sznaier, Noah J. Cowan*

Heterogeneous Pursuit of an Active Target under Sensing Constraints ..... 398
*Prajakta Surve, Shaunak D. Bopardikar, Alexander Von Moll, Isaac Weintraub, David W. Casbeer*

Safe Control Synthesis for Neural Network Control Systems via Constrained Zonotopes ..... 404
*Hang Zhang, Xiangru Xu*

Blood Pressure Prediction During Blood Transfusion: A Population-Informed Multi-Modal Sequential Inference Approach* ..... 410
*Yi-Ming Kao, Parham Rezaei, Sina Masoumi Shahrbabak, Jeremy Alanano Pepino*
*Ian Sebastian Kirk Shogren, Yang Wang, Andrew Tomas Reisner, Jin-Oh Hahn*

Geometric Insight in Solving Optimal Control Problems and the Emergence of Generalized Functions ..... 416
*Erik I. Verriest*

Stability analysis of fast extremum seeking control for Wiener systems using online complex curve fitting ..... 422
*Juan Javier Palacios Roman, Matthijs van Berkel, Maurice Heemels, Thijs van Keulen*

Ergodic Quasilinearization and Control for Brain Dynamics ..... 428
*Ilia Nasiriziba, Matthew F. Singh*

Exploiting Graph Convergence for Accelerated Optimization in Optimal Control of Large-Scale Networks ..... 434
*Martin T. Köhler, Artemi Makarow, Christian Kirches*

Bearing-Only Solution to the Fermat–Weber Location Problem for Euler-Lagrange Systems ..... 440
*Hong Liang Cheah, Mohammad Deghat*

Recursive Gaussian Process Based Safety Assurance Exploration Control in Unknown Environments ..... 446
*Kento Kanou, Tatsuya Ibuki*

Indirect Herding Control through a Chain-of-Influence by Uncertain Intermediaries ..... 452
*Jhyv N. Philor, Cristian F. Nino, Patrick M. Amy, Warren E. Dixon*

Encoding High-Level Knowledge in Offline Multi-Agent Reinforcement Learning Using Reward Machines ..... 458
*Shayan Meshkat Alsadat, Zhe Xu*

Accelerated Iterative Learning Control of Stochastic Discrete Linear Systems with Switching of the Dynamics and Reference Trajectory ..... 464
*Pavel Pakshin, Julia Emelianova, Eric Rogers*

Safe Online Control-Informed Learning ..... 470
*Tianyu Zhou, Zihao Liang, Zehui Lu, Shaoshuai Mou*

Mesoscopic digital control for disturbance string stability via constant time-headway spacing policies ..... 476
*Pietro Bonsanto, Mattia Mattioni, Alessio Iovine, Elena De Santis, Maria Domenica Di Benedetto*

A Delay-Free Adaptive Stepsize for the Incremental Aggregated Gradient Method ..... 482
*Zhicheng Deng, Xuyang Wu, Jie Lu*

Risk Mitigation for Interval Signal Temporal Logic Monitoring and Synthesis ..... 488
*Luke Baird, Andrew Schoer, Matthew Cleaveland, Samuel Coogan, Kevin Leahy*

A Small-Gain Look at Cyber-Physical Security ..... 494
*Sayan Chakraborty, Zhong-Ping Jiang*

Gradient-based Co-Design of Nonlinear Optimal Regulators with Stability Guarantee ..... 500
*Hikaru Hoshino*

Optimal Path Planning for Wheel Loader Automation via Hybrid Physics-Informed Data-Driven Soil-Tool Interaction Modeling ..... 506
*Armin Abdolmohammadi, Navid Mojahed, Bahram Ravani, Shima Nazari*

Learning Concave Bid Shading Strategies in Online Auctions via Measure-valued Proximal Optimization ..... 512
*Iman Nodozi, Djordje Gligorijevic, Abhishek Halder*

Data-Fused Model Predictive Control with Guarantees: Application to Flying Humanoid Robots ..... 518
*Davide Gorbani, Mohamed Elobaid, Giuseppe L'Erario, Hosameldin Awadalla Omer Mohamed Daniele Pucci*

Liveness, Reachability, and Reversibility of Signal Interpreted Petri Nets ..... 524
*Andreas Köhler, Ping Zhang*

COIN: COmmunication-aware INtegrated learning, estimation, and control ..... 530
*Dipankar Maity, Debdipta Goswami, Mohammad H. Mamduhi, Karl H. Johansson*

πMPC: A Parallel-in-horizon and Construction-free NMPC Solver[1] ..... 546
*Liang Wu, Bo Yang, Xu Yang, Yilin Mo, Yang Shi, Jan Drgona*

Simultaneous Manipulation of Two Magnetic Particles in a Controlled Magnetic Field ..... 547
*MD Nazmul Hasan, Arash Komaee*

Safety-Critical Input-Constrained Nonlinear Intercept Guidance in Multiple Engagement Zones ..... 548
*Praveen Kumar Ranjan, Abhinav Sinha, Yongcan Cao*

Inversion-free Adaptive Control of a Bicopter with Unknown Mass and Inertia ..... 554
*Jhon Manuel Portella Delgado, Ankit Goel*

An Adaptive Lyapunov-based MPC Framework for Quadcopter Attitude Control with Real-World Experimental Validation ..... 560
*Teo Protoulis, Alex Alexandridis*

Trajectory Planning for Contingency Landing using Optimal Control ..... 566
*Heejin S. Kim, Ella M. Atkins*

Realtime Wind Estimation using Low Cost Quadrotor Uncrewed Aerial Vehicles ..... 574
*Hiranya Udagedara, Mahdis Bisheban*

Control Barrier Functions for Flight-Critical Systems in Aerospace Applications ..... 580
*Max H. Cohen, Heather Hussain, Tamas G. Molnar, David E. J. Van Wijk, Joseph Gaudio, Peter A. Fisher Marcel Menner, Anuradha Annaswamy, Johannes Autenrieb, Eugene Lavretsky, Kevin Wise, Ryan Ratliff Aaron D. Ames*

Linear Programming Approach to Deceptive Path Planning Game with Goal Selection ..... 598
*Violetta Rostobaya, Yue Guan, James Berneburg, Daigo Shishika*

Game-to-Real Gap: Quantifying the Effect of Model Misspecification in Network Games ..... 605
*Bryce L. Ferguson, Chinmay Maheshwari, Manxi Wu, Shankar Sastry*

Privacy-preserving Nash Equilibrium Synthesis with Partially Ordered Temporal Objectives ..... 611
*Caleb Probine, Abhishek Kulkarni, Ufuk Topcu*

Designing Inferable Signaling Schemes for Bayesian Persuasion ..... 619
*Caleb Probine, Mustafa O. Karabag, Ufuk Topcu*

Deceptive Planning Exploiting Inattention Blindness ..... 627
*Mustafa O. Karabag, Jesse Milzman, Ufuk Topcu*

Risk-Aware Safety Filters with Poisson Safety Functions and Laplace Guidance Fields ..... 635
*Gilbert Bahati, Ryan M. Bena, Meg Wilkinson, Pol Mestres, Ryan K. Cosner, Aaron D. Ames*

A Formal gatekeeper Framework for Safe Dual Control with Active Exploration ..... 643
*Kaleb Ben Naveed, Devansh R. Agrawal, Dimitra Panagou*

Bayesian Risk-Aware CBFs for Discrete-Time Stochastic Systems with Learned Dynamics ..... 651
*Bardh Hoxha, Mitchell Black, Keyvan Majd, Hideki Okamoto, Georgios Fainekos, Danil Prokhorov*

Delay-Independent Safe Control with Neural Networks: Positive Lur'e Certificates for Risk-Aware Autonomy ..... 659
*Hamidreza Montazeri, Milad Siami*

Risk-Budgeted Control Framework for Improved Performance and Safety in Autonomous Vehicles ..... 667
*Pei Yu Chang, Vishnu Renganathan, Qadeer Ahmed*

Distributed Continuous-Time Control via System Level Synthesis ..... 674
*Yaozhi Du, Jing Shuang Lisa Li*

Scalable Distributed Nonlinear Control Under Flatness-Preserving Coupling ..... 680
*Fengjun Yang, Jake Welde, Nikolai Matni*

Explicit Distributed MPC: Reducing Computation and Communication Load by Exploiting Facet Properties ..... 688
*Parth R. Brahmbhatt, Hari S. Ganesh, Styliani Avraamidou*

A Graph-Based Classification Approach for the Adaptive Decomposition of Model Predictive Control Problems ..... 694
*Elliot Cooper, Andrew Allman*

Discrete-Time Robust Cooperative Output Regulation by Dynamic Measurement Output Feedback ..... 700
*Kürşad Metehan Gül, Selahattin Burak Sarsılmaz*

Geometry-Aware Decentralized Sinkhorn for Wasserstein Barycenters ..... 706
*Ali Baheri, David Millard, Alireza Vahid*

Dense Extended Kalman Filter for Simultaneous Cell State-Parameter Estimation ..... 712
*Luke Nuculaj, Jun Chen*

Battery Remaining-Useful-Life Estimation with Probabilistic Transformers ..... 718
*Evan Chen, Vishnu Pandi Chellapandi, Hoseinali Borhan, Christopher G. Brinton*

A Multi-objective Optimization based Energy Management System (EMS) for Improving Battery Health in Battery-Supercapacitor Electric Vehicles ..... 724
*Ashruti Upadhyaya, Chitralekha Mahanta*

High-Fidelity Battery Capacity Estimation Method Using Recurrent Neural Network and Data Mapping Strategy ..... 730
*Insu Chang, Su-Yang Shieh, Shobhit Gupta, Wesley Zanardelli*

Accelerating Battery Charging via Bayesian Optimization with Risk-Seeking Sampling ..... 736
*Yi Zhang, Xizhe Wang, Benben Jiang*

A nonlinear geometric approach for energy management of a cascaded multilevel inverter integrating the battery ..... 742
*Guillermo Buenfil Solis, Anatole Desreveaux, Alessio Iovine, William Pasillas-Lépine*

$\mathcal{H}_2$-optimal parameter tuning via structured feedback-gain basis decomposition ..... 748
*Daniel W. Hartman, Armin Zare*

Computation of Minimal Kernel Representation of a Discrete LTI Behavior ..... 754
*A. Sanand Amita Dilip, Swanand R. Khare*

Identifying Network Structure of Linear Dynamical Systems: Observability and Edge Misclassification ..... 760
*Jaidev Gill, Jing Shuang Lisa Li*

A Periodic Output Feedback Stabilization Scheme with Non-Simultaneous Sensing and Actuation ..... 766
*G. Manca, M. Sassano, L. Zaccarian*

Robust Controllable Set Computation using Constrained Convex Generators ..... 772
*Daniel Silvestre, Abraham P. Vinod*

Sequential Model Calibration of Vapor Compression Cycles using Approximate Bayesian Computation ..... 779
*Shrenik Zinage, Vaibhav Dixit, Ankush Chakrabarty, Hongtao Qiao, Christopher R. Laughman Ilias Bilionis, Vedang M. Deshpande*

Adaptive Motion Planning via Contact-Based Intent Inference for Human-Robot Collaboration ..... 787
*Jiurun Song, Xiao Liang, Minghui Zheng*

Input Shaping for Point-to-Point Motion with a Continuum Robot Arm ..... 795
*Rodolfo Hdz. Ibarra, Karan Baker, Parsa Molaei, Adrian Stein, Hunter B. Gilbert*

A Hierarchical Model-Free Controller for Stable Limit Cycle Generation in Underactuated Mechanical Systems ..... 801
*Muhammad Tahir, Muhammad Murtaza, Rameez Hayat, Seth Hutchinson, Usman Ali*

Task-Space Singularity Avoidance for Control Affine Systems Using Control Barrier Functions ..... 807
*Kimia Forghani, Suraj Raval, Lamar Mair, Axel Krieger, Yancy Diaz-Mercado*

Joint Price and Power MPC for Peak Power Reduction at Workplace EV Charging Stations ..... 813
*Thibaud Cambronne, Samuel Bobick, Wente Zeng, Scott Moura*

Energy Management Strategies for Electric Aircraft Charging Leveraging Active Landside Vehicle-to-Grid ..... 820
*Finn Vehlhaber, Mauro Salazar*

Optimal Surface Power Allocation for Sustainable Urban Electric Vehicle Growth ..... 826
*Joel Fierro-Ulloa, Carlos Canudas-de-Wit*

Regulating EV Charging Markets for Fairness: Incentives for Pricing and Capacity Decisions ..... 832
*Ruiting Wang, Kita Hu, Yitong Yu, Scott Moura*

Energy-Aware Integrated Proactive Maintenance Planning and Production Scheduling ..... 838
*Hongliang Li, Herschel C. Pangborn, Ilya Kovalenko*

Verification Framework for the Union of Control Barrier Functions ..... 846
*Chuanrui Jiang, Andrew Clark*

ReLU Barrier Functions for Nonlinear Systems with Constrained Control: A Union of Invariant Sets Approach ..... 854
*Pouya Samanipour, Hasan A. Poonawala*

Cooperative Visual-Inertial Navigation with Inter-Robot Coordinate Alignment ..... 861
*Jiayang Liu, Yizhi Zhou*

Warm-Starting Optimization-Based Motion Planning for Robotic Manipulators via Point Cloud-Conditioned Flow Matching ..... 867
*Sibo Tian, Minghui Zheng, Xiao Liang*

Context-aware LLM-based Safe Control Against Latent Risks ..... 875
*Xiyu Deng, Quan Khanh Luu, Van Anh Ho, Yorie Nakahira*

AuDeRe: Automated Strategy Decision and Realization in Robot Planning and Control via LLMs ..... 883
*Yue Meng, Fei Chen, Yongchao Chen, Chuchu Fan*

Sampling-based Efficient Receding Horizon Control Barrier Functions ..... 891
*Anni Li, Wei Xiao*

Accelerating Lyapunov-Stable Neural Control using Fulfillment Priority Logic ..... 897
*Abdelrahman Abdelgawad, Bassel El Mabsout, Zili Wang, Renato Mancuso, Sean B. Andersson Roberto Tron*

Augmented Lyapunov-Net: Incorporating Adversarial Verifier for the Construction of Lyapunov Functions using Neural Networks ..... 903
*Yuxuan Zhao, Junkai Wang, Fumin Zhang*

Stability Preserving Safe Control of a Bicopter ..... 909
*Jhon Manuel Portella Delgado, Ankit Goel*

A Lyapunov-and Concurrent Learning-Based Approach to Train the Weights of a DNN-Based Controller in Real-Time ..... 915
*Sujata Basyal, Jonathan Ting, Kislaya Mishra, Brendon Allen*

A nonlinear robust controller formulation for a class of systems subject to hysteresis ..... 921
*Cagri Hindistan, Erman Selim, Enver Tatlicioglu, Erkan Zergeroglu*

Robust Federated Q-Learning with Almost No Communication ..... 927
*Sreejeet Maity, Aritra Mitra*

The Deception Magic: Using Reward Machines for Privacy-Preserving Reinforcement Learning ..... 935
*Shayan Meshkat Alsadat, Zhe Xu*

Hereditary Geometric Meta-RL: Nonlocal Generalization via Task Symmetries ..... 941
*Paul Nitschke, Shahriar Talebi*

Lipschitz-Aware Exploration for Safety in Reinforcement Learning ..... 949
*Mayank Shekhar Jha, Kyriakos G. Vamvoudakis, Satya Marthi, Didier Theilliol*

Analytical characterization of inter-spike interval statistics in excitatory–inhibitory neuronal networks ..... 955
*Oliver Gambrell, Pavol Bokes, Abhyudai Singh*

Toward Skill-informed Haptic Feedback for Human Motor Learning in High-dimensional de-Novo Tasks ..... 961
*Ankur Kamboj, Rajiv Ranganathan, Xiaobo Tan, Vaibhav Srivastava*

Reduced-Input Model Predictive Control for Electrical Stimulation in Multi-Electrode Systems ..... 967
*Noor Hakam, Mayank Singh, Xiangming Xue, Krysten Lambeth, Oleg Favorov, Nitin Sharma*

Lag-Compensating Control Barrier Functions for Feasible Safety-critical Control ..... 973
*Yuchen Chen, Tamas G. Molnar, Gábor Orosz*

Safety-Critical Control with Guaranteed Lipschitz Continuity via Filtered Control Barrier Functions ..... 979
*Shuo Liu, Wei Xiao, Calin A. Belta*

Input-to-State Safe Backstepping: Robust Safety-Critical Control with Unmatched Uncertainties ..... 986
*Max H. Cohen, Pio Ong, Aaron D. Ames*

A set-based approach for stable MPC with Minkowski cost functions ..... 994
*Jordan Leung, Abraham P. Vinod*

Safe Control of Sampled-Data Systems via Discretized Parametric Contracting Dynamics ..... 1001
*Zahra Marvi, Francesco Bullo, Andrew G. Alleyne*

Online Constraint Tightening for MPC using Constrained Zonotope Reachability Analysis and Zonotope Over-Approximations ..... 1008
*Joshua A. Robbins, Jonah J. Glunt, Andrew F. Thompson, Herschel C. Pangborn*

Viscosity CBFs: Bridging the Control Barrier Function and Hamilton-Jacobi Reachability Frameworks in Safe Control Theory ..... 1016
*Dylan Hirsch, Jaime Fernández Fisac, Sylvia Herbert*

Synthesizing provably invariant sets via stochastically sampled data ..... 1024
*Amy K. Strong, Ali Kashani, Claus Danielson, Leila Bridgeman*

Resource Allocation under Stochastic Demands using Shrinking Horizon Optimization ..... 1030
*Alexandros E. Tzikas, Nazim Kemal Ure, Mansur Arief, Mykel J. Kochenderfer, Stephen P. Boyd*

A Hybrid Systems Model of Feedback Optimization for Linear Systems: Convergence and Robustness ..... 1038
*Oscar Jed R. Chuy, Matthew T. Hale, Ricardo G. Sanfelice*

Resource-Aware Greedy Sensor Scheduling with Guarantees under Sequence Supermodular Objectives ..... 1046
*Wooyeong Cho, Isean Bhanot, Ankur Mehta*

Proximal Dynamic Framework for Equilibrium Problems With Prescribed-time Guarantees ..... 1052
*Osama F. Abdel Aal, Necdet Sinan Özbek, Jairo Viola, YangQuan Chen*

Zeroth Order Gradient Descent for Low-rank Functions ..... 1058
*Aman Thakur, Rachel Kalpana Kalaimani*

Delay compensation of multi-input distinct delay nonlinear systems via neural operators ..... 1064
*Filip Bajraktari, Luke Bhan, Miroslav Krstic, Yuanyuan Shi*

Reduction of Traffic-Related Pollution through Green Infrastructure-Solutions ..... 1070
*Ciro D'Apice, Rosanna Manzo, Benedetto Piccoli, Luigi Rarità*

Equation-Free Coarse Control of Distributed Parameter Systems via Local Neural Operators ..... 1076
*Gianluca Fabiani, Constantinos Siettos, Ioannis G. Kevrekidis*

Covariate-Based Localized Conditioning of Random Optimal Parameters in an Abstract Parabolic Model for the Transdermal Transport of Ethanol and a Transdermal Alcohol Biosensor* ..... 1084
*Qinyang Tan, Hongyi Chen, Susan E. Luczak, I. G. Rosen*

Optimizing pricing and performance of sensor network for optimal estimation of parabolic PDEs ..... 1090
*Michael A. Demetriou*

Grad-Div Stabilized Mixed Finite Element Method for Control of Incompressible Flows ..... 1096
*S.S. Ravindran*

Bridging Control with Neural Network Verifier alpha-beta-CROWN: A Tutorial ..... 1102
*Haoyu Li, Xiangru Zhong, Hao Cheng, Bin Hu, Huan Zhang*

Reliable Air-to-Air Communication for UAVs using Directional Antennas ..... 1120
*Xinquan Zheng, Haomeng Zhang, Junfei Xie, Jiajian Chang, Yan Wan*

Flight Control of a Fixed-Wing Aircraft with Angle-of-Attack Sensor Failure ..... 1126
*Riley J. Richards, Jacob C. Vander Schaaf, Syed Aseem Ul Islam, Dennis S. Bernstein*

An RRT+B-Spline Planner Guaranteeing Safe Obstacle Navigation for UAVs ..... 1132
*Dean B. Anderson, Randal W. Beard*

A Quaternion-based Attitude Tracking Control of UAVs using Model Predictive Control and Prescribed Performance Approaches ..... 1138
*Fatemeh Mohammadzamani, Chao Shen, Hashim A. Hashim*

Fast RLS Identification Leveraging the Linearized System Sparsity: Predictive Cost Adaptive Control for Quadrotors ..... 1144
*Tam W. Nguyen*

Coordinated UAV Beamforming and Control for Directional Jamming and Nulling ..... 1150
*Filippos Fotiadis, Brian M. Sadler, Ufuk Topcu*

Redefining End-of-Life: Intelligent Automation for Electronics Remanufacturing Systems ..... 1158
*Sibo Tian, Xiao Liang, Sara Behdad, Minghui Zheng*

Bayesian Holonic Systems: Equilibrium, Uniqueness, and Computation ..... 1176
*Yunian Pan, Quanyan Zhu*

Optimal Modified Feedback Strategies in LQ Games under Control Imperfections ..... 1182
*Mahdis Rabbani, Navid Mojahed, Shima Nazari*

Game-Theory-Assisted Reinforcement Learning for Border Defense: Early Termination based on Analytical Solutions ..... 1190
*Goutam Das, Michael Dorothy, Kyle Volle, Daigo Shishika*

Multi-Agent Guided Policy Search for Non-Cooperative Dynamic Games ..... 1197
*Jingqi Li, Gechen Qu, Jason J. Choi, Somayeh Sojoudi, Claire Tomlin*

Revisiting Dynamic Pricing Games: Nash Equilibrium under Fairness ..... 1205
*Anju Anand, Cassidy Roberts, Emrah Akyol*

Safe Event-Triggered Learning for Sampled-Data Systems ..... 1210
*Azra Begzadić, Armin Lederer, Sandra Hirche, Jorge Cortés, Sylvia Herbert*

Partial Resilient Leader-Follower Consensus in Time-Varying Graphs ..... 1216
*Haejoon Lee, Dimitra Panagou*

Collaborative Altruistic Safety in Coupled Multi-Agent Systems ..... 1224
*Brooks A. Butler, Xiao Tan, Aaron D. Ames, Magnus Egerstedt*

Robust Safety-Critical Control of Networked SIR Dynamics ..... 1230
*Saba Samadi, Brooks A. Butler, Philip E. Paré*

Trajectory Encryption Cooperative Salvo Guidance ..... 1236
*Lohitvel Gopikannan, Shashi Ranjan Kumar, Abhinav Sinha*

On Robustness of Consensus over Pseudo-Undirected Path Graphs ..... 1242
*Abhinav Sinha, Dwaipayan Mukherjee, Shashi Ranjan Kumar*

Nonlinear Guidance for a Pursuer-Turret Team for Maneuvering Target Engagement ..... 1248
*Shivam Bajpai, Abhinav Sinha, Isaac Weintraub, Rajnikant Sharma, David Casbeer*

Adaptive Event-Triggered Policy Gradient for Multi-Agent Reinforcement Learning ..... 1254
*Umer Siddique, Abhinav Sinha, Yongcan Cao*

Cooperative Relay-Assisted Traveling Salesman Problem using Graphs of Convex Sets ..... 1260
*Satyanarayana G. Manyam, David W. Casbeer, Isaac E. Weintraub*

Tactical Asset Allocation Game (TAAG) with Sensor Performance, Deception, and Differential Subgames ..... 1267
*Rachael L. Judy, Zachariah E. Fuchs*

Optimal and Heuristic Dispatch of PV-BESS for Multi-Load Peak Shaving ..... 1275
*Caleb D. McDougal, Bryan P. Rasmussen*

A Control Co-Design Framework to Achieve Solution Feasibility in Energy System Optimization Problems* ..... 1281
*Tania Rifat Jahan, Donald J. Docimo*

Safety-Aware Fast Charging Control for Lithium-ion Batteries via Physics-Enhanced Gaussian Process ..... 1287
*Wonoo Choo, Yuichi Kajiura, Jorge Espin, Zhicheng Xu, Dong Zhang*

Optimization of Phase Change Material Integration for Active Cooling Control* ..... 1293
*Asmaou S. Ouedraogo, Donald J. Docimo*

Threshold Policy-Enhanced Reinforcement Learning for Multi-Path Wireless Charging Scheduling in Coupled Power and Transportation Systems ..... 1301
*Liangliang Hao, Yuanyu Cai, Jiangliang Jin, Cong Chen*

Strategic Congestion Manipulation by Monopolistic Storage Aggregator in Power Networks ..... 1308
*Mehdi Davoudi, Junjie Qin*

Enabling steep slope walking on Husky using reduced order modeling and quadratic programming ..... 1316
*Kaushik Venkatesh Krishnamurthy, Eric Sihite, Chenghao Wang, Shreyansh Pitroda, Adarsh Salagame Alireza Ramezani, Morteza Gharib*

Peak Bounds for the Estimation Error under Sensor Attacks ..... 1322
*Axel Stafström, Daniel Arnström, Adam Miksits, David Umsonst*

Direct Data-Driven Control to Output Tracking Of Switched Linear Systems ..... 1328
*Zezhou Zhang, Qingze Zou*

Generic numbers of finite poles and zeros: a bond graph-based determination ..... 1334
*Amine Laaribi, Damien Ébérard, Wilfrid Marquis-Favre*

Robust Linear Output Regulation Under Piecewise Bernstein/Bézier Exogenous Signals ..... 1340
*Venanzio Cichella, Nicola Mimmo, Lorenzo Marconi*

Modeling and Experimental Validations of Human Driver Controls under Advisory Speed Guidance in Connected Mixed Traffic ..... 1346
*Rongyao Wang, Jihun Han, Tyler Ard, Dominik A. Karbowski, Ardalan Vahidi, Yunyi Jia*

Regularized Online Adaptation of Parametric Interactive Multiple Model against Overfitting for Vehicle Motion Tracking ..... 1352
*Zini Wang, Zhiwu Huang, Yongjie Liu, Heng Li, Weirong Liu, Jing Wang*

From Ellipsoids to Midair Control of Dynamic Hitches ..... 1358
*Jiawei Xu, Subhrajit Bhattacharya, David Saldaña*

On Improved Statistical Accuracy of Low-Order Polynomial Chaos Approximations ..... 1365
*Vedang M. Deshpande, Raktim Bhattacharya*

Model Predictive Control of a Motion Rectifier Power Take-off with Unidirectional Power Flow ..... 1371
*Lisheng Yang, Jianuo Huang, Xiaofan Li, Jia Mi, Scott Lambert, Petr Sindler, Muhammad Hajj, Lei Zuo*

Biconjugate Impedance Matching Control of the HERO WEC ..... 1377
*Allison Riley, Mohamed A. Shabara, Denis Aslangil*

From Cut-In to Rated: Multi-Region Floating Offshore Wind Farm Control for Secondary Frequency Regulation ..... 1383
*Stephen Ampleman, Dennice F. Gayme*

A Hierarchical Optimization Method for Mission Planning of a Mobile, Anchorless Wave-Powered Desalination Device ..... 1390
*Minhazul Alam, Carson McGuire, Limeng Liu, Matthew Bryant, Chris Vermillion*

Q-Learning Based Adaptive Linear Extended State Observer for Core Power Control of Pressurized Water Reactor ..... 1398
*Faraz Haider, Sumit Ranjan Kumar, Ahmad Ali*

Barometer-Aided Attitude Estimation ..... 1404
*Méloné Nyoba Tchonkeu, Soulaimane Berkane, Tarek Hamel*

A multi-layer resilient architecture for constrained autonomous vehicles subject to false data injections during long range missions ..... 1410
*Giuseppe Franzè, Walter Lucia, Francesco Tedesco, Antonello Venturino, Amr Youssef*

Application of Actively Coupled Sensor Configuration and Planning to an Unknown Forest Fire Environment ..... 1416
*Jeffrey DesRoches, Prakash Poudel, Raghvendra V. Cowlagi*

Output-Feedback for UAS Using Bearing and Angular Size in an Anti-Pronav Collision Avoidance Scheme ..... 1422
*Jen-Jui Liu, Curtis P. Evans, Randal W. Beard*

Hierarchical Informative Path Planning via Graph Guidance and Trajectory Optimization ..... 1428
*Avraiem Iskandar, Shamak Dutta, Kevin Murrant, Yash Vardhan Pant, Stephen L. Smith*

Efficient Optimal Path Planning in Dynamic Environments Using Koopman MPC ..... 1436
*Mohammad Abtahi, Navid Mojahed, Shima Nazari*

Koopman Spectral Analysis and System Identification for Stochastic Dynamical Systems via Yosida Approximation of Generators ..... 1444
*Jun Zhou, Yiming Meng, Jun Liu*

Koopman Control Parametrization: Data-Driven Convex Controller Design for a Class of Nonlinear Systems ..... 1452
*Taha Ondogan, Ran Jing, Andrew P. Sabelhaus, Roberto Tron*

Data-Driven Observer Synthesis for Autonomous Limit Cycle Systems through Estimation of Koopman Eigenfunctions ..... 1460
*Angela Ni, Wentao Tang*

Trajectory Tracking of Quadrotors Using Deep Koopman Operator-Based Data-Driven Model Predictive Control ..... 1466
*Kunwu Zhang, Hugh H.-T. Liu*

On the Parametric Interpolation of the Koopman Operator for Dynamical Systems Prediction ..... 1472
*Radu Pavel, Debdipta Goswami, Stephanie Stockar*

Invariant-set motion-planner for unicycle dynamics under closed-loop feedback linearization ..... 1478
*Jordan Leung, Stefano Di Cairano*

Inverse Optimal Feedback and Gain Margins for Unicycle Stabilization ..... 1485
*Kwang Hak Kim, Velimir Todorovski, Miroslav Krstić*

Half-Global Deadbeat Parking for Dubins Vehicle ..... 1491
*Miroslav Krstić, Kwang Hak Kim, Velimir Todorovski*

Modular Design of Strict Control Lyapunov Functions for Global Stabilization of the Unicycle in Polar Coordinates ..... 1497
*Velimir Todorovski, Kwang Hak Kim, Miroslav Krstić*

Integrator Forwarding Design for Unicycles with Constant and Actuated Velocity in Polar Coordinates ..... 1503
*Miroslav Krstić, Velimir Todorovski, Kwang Hak Kim, Alessandro Astolfi*

Extremum Seeking in 3-D Environments with Obstacle Avoidance ..... 1509
*Lai Jiang, Gaofeng Pan, Yang Zhu*

Convex Optimization-Based Inverse Reinforcement Learning for Linear Quadratic Control ..... 1515
*Bosen Lian, Jiacheng Wu, Md Hasanuzzaman Chowdhury Joy, Wenqian Xue, Nhan Nguyen*

Defending Against Poisoning Attacks in LQR Controllers using Reinforcement Unlearning ..... 1521
*Varkey M. John, Kyriakos G. Vamvoudakis*

Necessary and Sufficient Conditions for the Optimization-Based Concurrent Execution of Learned Robotic Tasks ..... 1527
*Sheikh A. Tahmid, Gennaro Notomista*

Adversarial Reinforcement Learning for Robust Control of Fixed-Wing Aircraft under Model Uncertainty ..... 1533
*Dennis J. Marquis, Blake Wilhelm, Devaprakash Muniraj, Mazen Farhood*

Improved Robustness of Deep Reinforcement Learning for Control of Time-Varying Systems by Bounded Extremum Seeking ..... 1540
*Shaifalee Saxena, Alan Williams, Rafael Fierro, Alexander Scheinker*

Reinforcement Learning-based Safe Optimal Control of Nonlinear Discrete-Time Affine Systems under Adversarial Inputs ..... 1548
*Behzad Farzanegan, S. Jagannathan*

Optimal Control Strategies for Cutaneous Inflammatory Disease Treatment Using a Predictive Multi-scale Model ..... 1554
*Gowri Y. Subedar, Saimai Lau, Michaëlle N. Mayalu*

Angular Momentum Linear Inverted Pendulum Model for Bipedal Walkers Under Foot Slip: Analysis and Experiments ..... 1560
*Xinyan Huang, Kuo Chen, Xunjie Chen, Jingang Yi*

A Model of Cell Size Control in Proliferating Human Cells ..... 1566
*Sayeh Rezaee, Cesar Nieto, Abhyudai Singh*

Static Friction Modeling and Compensation for Improved Force Tracking in Pneumatic Cylinders Using Sliding Mode Control ..... 1572
*Ammar Yacoub, Edmond Richer, Yildirim Hurmuzlu*

Adaptive Chemotherapy Control under Tumor Heterogeneity via Reinforcement Learning ..... 1578
*Bereket Sitotaw Kidane, Md Samiul Haque Motayed, Shuo Wang*

Fractional-Order Neural Networks for Data-Driven Model Predictive Control of an Artificial Pancreas ..... 1584
*Federico Baldisseri, Andrea Wrona, Danilo Menegatti, Francesco Delli Priscoli, Nebojša Koledin Riccardo Caponetto, Luca Patanè*

Safety-Critical Control with Bounded Inputs: A Closed-Form Solution for Backup Control Barrier Functions ..... 1590
*David E. J. van Wijk, Ersin Daş, Tamas G. Molnar, Aaron D. Ames, Joel W. Burdick*

Neural Explicit Reference Governor for Safe Control of Resource-Constrained Autonomous Systems in Dynamic Environments ..... 1598
*Mu'Taz A. Momani, Mehdi Hosseinzadeh*

CPU- and GPU-Based Parallelization of the Robust Reference Governor ..... 1604
*Hamid R. Ossareh, William Shayne, Samuel Chevalier*

A Less-Conservative Reference Governor Strategy for Safe Command Tracking of Nonlinear Systems ..... 1610
*Huayi Li*

A Geometric Optimal Control Algorithm for Navigation Through Heterogeneous Regions ..... 1616
*Sarjana Oradiambalam Sachidanandam, Yancy Diaz-Mercado*

Online Intention Prediction via Control-Informed Learning ..... 1622
*Tianyu Zhou, Zihao Liang, Zehui Lu, Shaoshuai Mou*

Differential Flatness Based Path Planning Around Obstacles of a 2D Gantry Crane ..... 1628
*Eric Mountain, Adrian Stein, Jesse Maxime, Tarunraj Singh*

Output-Feedback Optimal Control of Heterogeneous Quadrotor Swarms with Communication Delays ..... 1634
*Ehsan Soleimani, S. Jagannathan*

Model Predictive Control for Energy-Optimal Regenerative Braking in Autonomous Electric Vehicle ..... 1640
*Amin Ghorbanpour, Stephen Baldwin*

Efficient Norm-Based Reachable Sets via Iterative Dynamic Programming ..... 1647
*Akash Harapanahalli, Samuel Coogan*

Exact Representation Complexity Reduction for Constrained Zonotopes with Applications to Dynamic Systems and Control ..... 1654
*Aayush Dulal, Justin P. Koeln*

Computationally Efficient State and Model Estimation via Interval Observers for Partially Unknown Systems ..... 1662
*Mohammad Khajenejad, Zeyuan Jin*

Enhanced Set-Based State Estimation via Dependency Preservation ..... 1668
*Jonas Wagner, Justin Ruths*

Improved Systematic Interval Observers for Bounded-Error LTI Systems ..... 1674
*Elisabeth Andarge Gedefaw, Siva Rohit Mareddu, Mohammad Khajenejad*

A Reachability-Oriented Approach to Linear System Identification Under Unknown Bounded Noise ..... 1680
*Sibibalan Jeevanandam, Neera Jain*

Policy Optimization in Robust Control: Weak Convexity and Subgradient Methods ..... 1686
*Yuto Watanabe, Feng-Yi Liao, Yang Zheng*

Generalized Multi-Constraint Extremum Seeking ..... 1693
*Alan Williams, Jorge Cortés, Alexander Scheinker*

Robust Control Co-design with Experimental Validation for an Electromechanical System ..... 1701
*Austin L. Nash, James Morehouse*

PAD-TRO: Projection-Augmented Diffusion for Direct Trajectory Optimization ..... 1707
*Jushan Chen, Santiago Paternain*

A Multi-Rate Feedback Control System to Model and Analyze Distributed Algorithms with Error Feedback ..... 1715
*Liyuan Liang, Xinwei Zhang, Nicola Elia, Mingyi Hong*

Design of Restricted Kalman filters for infinite dimensional systems with moving sensors ..... 1723
*Michael A. Demetriou, Weiwei Hu*

Boundary Control of Infinite Horizon Semilinear Parabolic Equations * ..... 1729
*Eduardo Casas, Karl Kunisch*

Optimal Control in Poroelastic Systems via E-Radiality Theory ..... 1735
*Ala' Alalabi, Lorena Bociu*

Discrete-time Luenberger observer and Kalman filter design for non-isothermal pipeline systems ..... 1742
*Safa Khari, Charles Robert Koch, Stevan Dubljevic*

Distributed Attraction-Repulsion Potential for Multi-Agents Formation Control ..... 1749
*Hemanta Ban, Seddik M. Djouadi, Kevin Tomsovic*

Reachability Analysis for Design Optimization ..... 1755
*Steven Nguyen, Jorge Cortés, Boris Kramer*

Energy-Based Dynamical Models for Neurocomputation, Learning, and Optimization ..... 1762
*Arthur N. Montanari, Francesco Bullo, Dmitry Krotov, Adilson E. Motter*

Comparison of Gain Matrix Parameterizations for Nonlinear Spacecraft Attitude Control ..... 1780
*Nicholas P. Nurre, Ehsan Taheri*

Efficient Stabilization of Hybrid Coulomb Spacecraft Formations using Control Lyapunov Functions ..... 1786
*Adam M. Tahir*

Real-Time Retargeting Using Controllability Boundary for Chandrayaan-3 Lunar Landing ..... 1792
*Suraj Kumar, Debjyoti Chakrabarti, Aditya Rallapalli, Bharat Kumar GVP, Ashok Kumar Kakula*

Nonlinear MPC for Cislunar Trajectory Correction Under Impulsive Maneuver Uncertainties: A Computational Performance Analysis ..... 1800
*Koya Yamamoto, Ehsan Taheri, John Junkins*

Model Predictive Control of Collinear Coulomb Spacecraft Formations ..... 1806
*Adam M. Tahir*

Stochastic Optimal Control with Weighted Terminal Accuracy under Control-Linear Noise ..... 1812
*Kristen I. Amarell, Daniel J. Scheeres, Jay W. McMahon*

Decision and Control in Sports Analytics: A Tutorial ..... 1818
*David Grimsman, Scott Nestler, Christoper Archibald, William Melville*

Linear-Quadratic Mean Field Games with Multiple Heterogeneous Major Agents* ..... 1829
*Arman Sharifi, Hao Xu*

Approximately Solving Continuous-Time Mean Field Games with Finite State Spaces ..... 1835
*Yannick Eich, Christian Fabian, Kai Cui, Heinz Koeppl*

Modeling Global Financial Stability Through Policy Design: A Hierarchical Stackelberg Mean Field Game Perspective ..... 1841
*Prathmesh Rathod, Gökçe Dayanıklı*

Convexifying Mean-Field Control: An Occupation-Measure and Frank–Wolfe Approach ..... 1849
*Di Yu, Sixiong You, Chaoying Pei*

DC-Link Stability and Rectification Current Observer for AC Drives ..... 1856
*Mohammad Ghousein, Rashad Ghassani*

A Comparison of Triangulation and Multilateration Localization Techniques for Crane Cable Detection ..... 1864
*Eemil Harkonen, Alexander Zonnenberg, Monica Graham, Christopher Adams, William Singhose*

Feedback-linearization control for psychrometric testing chambers ..... 1871
*Raghav Kakani, Adil Manzoor Shaikh, Seungho Rhee, Dohyeon Kim, Kevin J. Kircher*

Saturated ARISE Control for Uncertain Lower Limb Hybrid-Exoskeleton Dynamics ..... 1878
*Joseph Crapet, Sujata Basyal, Kislaya Mishra, Jonathan Ting, Brendon C. Allen*

Integrating Target-Distance Feedback with Bayesian Optimization for Cost-Effective Process Optimization ..... 1884
*Bharat Singhal, Masashi Matsumoto, Jun Shinagawa*

Adaptive DHFD-DSMC Based Control for Five-Phase PMSM ..... 1891
*Daniel Igbokwe, Malek Ghanes, Marc Bodson, Mohamed Hamida, Amir Messali*

Decentralized CBF-based Safety Filters for Collision Avoidance of Cooperative Missile Systems with Input Constraints ..... 1897
*Johannes Autenrieb, Mark Spiller*

Design and Modeling of a Heat-exchange Sleeve for Enhanced Thermal Safety of Lithium-Ion Batteries ..... 1904
*Patryck Ferreira, Shu-Xia Tang*

Unbalancing Second-life Battery Pack with Bidirectional DC/DC Converter for Extending Life ..... 1910
*Zhicheng Xu, Yuichi Kajiura, Wonoo Choo, Jorge Espin, Dong Zhang*

Conformalized Transfer Learning for Li-ion Battery State of Health Forecasting under Manufacturing and Usage Variability ..... 1916
*Samuel Filgueira Da Silva, Mehmet Fatih Ozkan, Faissal El Idrissi, Marcello Canova*

Analysis of the Single Particle Model with Electrolyte for Lithium Iron Phosphate Batteries ..... 1922
*Jaewoong Lee, Shida Jiang, Shengyu Tao, Wente Zeng, Pierre-Olivier Lamare, Clement Bertin Daniel Monier-Reyes, Sebastien Benjamin, Scott J. Moura*

System Identification of Lithium-Ion Battery Equivalent Circuit Models Using Ensemble Kalman Inversion ..... 1930
*Farzaneh Barat, Sara Wilson, Huijeong Kim, Huazhen Fang*

Concurrent Optimization of Lithium-Ion Battery Charging and Balancing via Safe and Data-Efficient Deep Reinforcement Learning ..... 1938
*Habtamu Hailemichael, Beshah Ayalew, Miriam Figueroa-Santos, Morgan Barron*

Replay Attack Detection with Chaotic Masking in Cyber-physical Systems ..... 1944
*Hongnian Lu, Zhitao Liu, Tao Chen, Hongye Su*

□∞ Analysis and Synthesis for Vector-Valued Edge Consensus Networks ..... 1950
*Vlad Mihaly, Mircea Şuşcă, Dany Abou Jaoude*

A PIE Representation of Cylindrical PDEs and Stability Analysis Using LPIs ..... 1957
*Varshitha Purra, Yulia T. Peet*

Robust Data-Driven Control for Nonlinear Systems Using their Digital Twins and Quadratic Funnels ..... 1965
*Shiva Shakeri, Mehran Mesbahi*

Discrete-Time Stability Analysis of ReLU Feedback Systems via Integral Quadratic Constraints ..... 1973
*Sahel Vahedi Noori, Bin Hu, Geir Dullerud, Peter Seiler*

Magnetic Position Estimation in Ferrous Actuators Under Hysteresis: A Switched-Gain Non-Linear Observer Approach ..... 1979
*Sajjad Daroudi, Rajesh Rajamani*

Sample Tilt Control for Atomic Force Microscopes with Multiple Parallel Active Cantilevers ..... 1985
*Tingyi Lin, Yizhou Hao, Wenyue Li, Joshua Sung, Fangzhou Xia*

Machine Learning-based Stability Lobe Diagram Estimation and Chatter Suppression Control in Milling Process ..... 1992
*Yi Huang, Feng Han, Wenyi Liu, Jingang Yi, Yuebin Guo*

Frequency-Domain Fault Analysis and Diagnostic-Enhanced Design of Hydraulic Systems ..... 1998
*Weichen Chen, Yongsoon Yoon*

Compliance Control of an Electro-Hydraulic Large-Scale Manipulator for Robotic On-Site Construction ..... 2004
*Philipp Wasserloos, Andreas Gienger, Oliver Sawodny*

Dominant Pole Placement in Linear Quadratic Regulators: Application in Automated Design of Gain-Scheduled Control ..... 2010
*Lahiru Ekanayake, Arash Komaee*

Learning Feedforward Planners from Frequency-Domain Data ..... 2016
*Yu Jiang*

Safe Navigation in Dynamic Environments Using Data-Driven Koopman Operators and Conformal Prediction ..... 2022
*Kaier Liang, Guang Yang, Mingyu Cai, Cristian-Ioan Vasile*

On Globally Optimal Stochastic Policy Gradient Methods for Domain Randomized LQR Synthesis ..... 2029
*Alex Nguyen-Le, Nikolai Matni*

Trusted Reinforcement Learning Control of a Shipboard Stewart Platform via Control Lyapunov Functions and Control Barrier Functions ..... 2036
*Jonathan Rogers, John Ripple*

Quadrotor Aerobatics: A Geometric Algebra–Based Tracking Approach ..... 2042
*Omar Alejandro Garcia Alcantara, Steven Sandoval, Ignacio Rubio Scola, Luis Rodolfo Garcia Carrillo Eduardo Steed Espinoza Quesada*

Resilient UAV Mission Management in Threat-Prone Environments using Markov Decision Processes ..... 2048
*Md Muzakkir Quamar, Ali Nasir*

Nonlinear Time-Optimal Trajectory Optimization for Heterogeneous Microrobots in Constrained Environments ..... 2054
*Hossein TalebiRostami, Logan E. Beaver*

Data-driven Predictive Control for Autonomous Vehicle Tracking with Obstacle Avoidance Using Gaussian Processes* ..... 2060
*Mengxu Xie, Tong Ma*

An Actor-Critic-Identifier Control Design for Increasing Energy Efficiency of Automated Electric Vehicles ..... 2066
*Hamed Faghihian, Arman Sargolzaei*

Learning Passive Continuous-Time Dynamics with Multistep Port-Hamiltonian Gaussian Processes ..... 2073
*Chi Ho Leung, Philip E. Paré*

Data-Driven Discrepancy Modeling in Higher-Dimensional State Space via Coprime Factorization ..... 2079
*Sourav Sinha, Mazen Farhood*

Entropy-Regularized Two-Stage State-Only Imitation Learning under Unknown Dynamics ..... 2085
*Dejin Wang, Seyede Fatemeh Ghoreishi*

Learning Transferable Friction Models and LuGre Identification via Physics-Informed Neural Networks ..... 2093
*Asutay Ozmen, João P. Hespanha, Katie Byl*

Adaptive Control with Integral Concurrent Learning for Systems with Uncertain Dynamical and Control Effectiveness Terms ..... 2100
*Zeki Gul, Enver Tatlicioglu, Meryem Deniz, Erkan Zergeroglu*

Data-driven Practical Stabilization of Nonlinear Systems via Chain Policies: Sample Complexity and Incremental Learning ..... 2106
*Roy Siegelmann, Enrique Mallada*

On the Equivalence of Koopman Eigenfunctions and Commuting Symmetries ..... 2114
*Xinyuan Jiang, Yan Li*

Variations on the Retarded Oscillator through Diffeology ..... 2120
*William Clark*

Traffic Characterization of Event-Triggered Control Systems: A Geometric-Algebraic Perspective ..... 2126
*Tao Chen, Hongju Wang, Wenfeng Hu*

Homogeneous Approximations and Fixed Time Semistability with Applications to Network Consensus ..... 2132
*Kriti Verma, Wassim M. Haddad*

Source-Seekers with Obstacle Avoidance for Nonholonomic Vehicles with Perception: A Model-Free Geometric Hybrid Control Approach ..... 2138
*Xiyuan Zhang, Mahmoud Abdelgalil, Jorge I. Poveda*

Enhancing Multi-Agent Reinforcement Learning by Mining Decomposed Causal Signal Temporal Logic Formulas ..... 2145
*Hadi Partovi Aria, Zhe Xu*

Incorporating System-level Safety Requirements in Perception Models via Reinforcement Learning ..... 2151
*Weisi Fan, Jesse Lane, Qisai Liu, Soumik Sarkar, Tichakorn Wongpiromsarn*

Wasserstein-Barycenter Consensus for Cooperative Multi-Agent Reinforcement Learning ..... 2159
*Ali Baheri*

Expert-Augmented Distributed Multi-Agent Reinforcement Learning with Jensen–Shannon Regularization: A Policy Gradient Approach ..... 2165
*Dongming Wang, Yuhan Zhu, Yanyu Zhang, Wei Ren*

Game-theoretic Social Distancing in Competitive Bi-Virus SIS Epidemics ..... 2171
*Benjamin Catalano, Keith Paarporn, Sebin Gracy*

Stochastic Analysis of Plasmids Competition in a Bacterial Switch ..... 2177
*Iacopo Ruolo, Eric Lu, Domitilla Del Vecchio*

Prescribed Time Control of an Agent-Based SIWS Epidemic Model ..... 2183
*Zohreh Abbasi, Xinzhi Liu*

Feedback Regulation of Protein Synthesis with State-Dependent Delays ..... 2189
*Poulami Chatterjee, Abhyudai Singh*

Bayesian Nonlinear State-Space Modeling and Chance-Constrained Predictive Control for Hemodynamic Resuscitation ..... 2195
*Elham Estiri, Hossein Mirinejad*

From Bundles to Backstepping: Geometric Control Barrier Functions for Safety-Critical Control on Manifolds ..... 2201
*Massimiliano De Sa, Pio Ong, Aaron D. Ames*

Importance of the Input Cost when Designing Control Barrier Function Safety Filters ..... 2209
*Victor Freire, Marco M. Nicotra*

Probabilistic Control Barrier Functions: Safety in Probability for Discrete-Time Stochastic Systems ..... 2215
*Pol Mestres, Blake Werner, Ryan K. Cosner, Aaron D. Ames*

Safe Trajectory Planning with Bernstein Polynomials Under Control Barrier Function Constraints ..... 2223
*Jungeun Lee, Seongjae Lee, Jeong Hwan Jeon*

Barrier-Riccati Synthesis for Nonlinear Safe Control with Expanded Region of Attraction ..... 2230
*Hassan Almubarak, Maitham F. AL-Sunni, Justin T. Dubbin, Nader Sadegh, John M. Dolan Evangelos A. Theodorou*

Autonomy Architectures for Safe Planning in Unknown Environments Under Budget Constraints ..... 2236
*Daniel M. Cherenson, Devansh R. Agrawal, Dimitra Panagou*

Trajectory Optimization for Cooperative Navigation by solving the HJB Equation using PINNs ..... 2244
*Maria R. Wojciechowski, Jayaratna Deshamouni, Michael Steffens, Raghvendra V. Cowlagi*

Adaptive Input Shaper Design for Unknown Second-Order Systems with Real-Time Parameter Estimation ..... 2250
*Nyi Nyi Aung, Bradley Wight, Adrian Stein*

Regret of H∞ Preview Controllers ..... 2256
*Jietian Liu, Peter Seiler*

Combined Learning and Control: A New Paradigm for Optimal Control with Unknown Dynamics ..... 2262
*Panagiotis Kounatidis, Andreas A. Malikopoulos*

Zero-Shot Transferable Solution Method for Parametric Optimal Control Problems ..... 2270
*Xingjian Li, Kelvin Kan, Deepanshu Verma, Krishna Kumar, Stanley Osher, Ján Drgoňa*

A Comparison of MPC Architectures for a Heat Pump ..... 2278
*Titus Quah, Scott A. Bortoff, James B. Rawlings*

Adaptive-R Dual-Mode Model Predictive Control ..... 2286
*Suchita Undare, Kiana Karami, M. Scott Trimboli*

Inexact-ADMM for Embedded Linear Model Predictive Control ..... 2292
*Ambrose A. Adegbege, Victor Oluleti, Nia Harish*

Robust Distributed Model Predictive Control under Limited Communication Rates and DoS Attacks ..... 2298
*Xinyuan Cao, Yufan Dai, Shaoyuan Li, Yang Shi*

Robust Helicopter Ship Deck Landing With Guaranteed Timing Using Shrinking-Horizon Model Predictive Control ..... 2304
*Philipp Schitz, Paolo Mercorelli, Johann C. Dauer*

Non-Ergodic Convergence Algorithms for Distributed Consensus and Coupling-Constrained Optimization ..... 2311
*Chenyang Qiu, Zongli Lin*

DC Fast Charging Station Queue Minimization Through Dynamic Pricing ..... 2317
*Mohammad Hossein Abbasi, Jiangfeng Zhang, Venkat Krovi*

Temporal Variabilities Limit Convergence Rates in Gradient-Based Online Optimization ..... 2323
*Bryan Van Scoy, Gianluca Bianchin*

Quadratic Surrogate Attractor for Particle Swarm Optimization ..... 2329
*Maurizio Clemente, Marcello Canova*

Speed Limitations of Gradient-Based Algorithms for Heterogeneous Optimization ..... 2335
*Wuwei Wu, Miaomiao Wang, Patrizio Colaneri, Jie Chen*

Backstepping Stabilization of ∞ + ∞ Continua of Linear Hyperbolic Systems * ..... 2341
*Jukka-Pekka Humaloja, Nikolaos Bekiaris-Liberis*

Optimal sensor location for predictive iterative learning control of distributed parameter systems ..... 2347
*Maciej Patan, Kamil Klimkowicz, Krzysztof Patan, Eric Rogers*

Concurrent Design of Event-Triggered and Gain Scheduled Control for 2×2 Coupled Hyperbolic PDEs ..... 2353
*Eranda Somathilake, Mamadou Diagne*

SEC-Two: Secure Estimation over Two Channels ..... 2359
*Jacopo Porzio, Aris Kanellopoulos, Rijad Alisic, György Dán, Henrik Sandberg*

Safe Trajectory Tracking of the Stefan Problem with Second-Order Moving Boundary Dynamics ..... 2367
*Shumon Koga, Miroslav Krstic*

Energy-Aware Multi-UAV Cooperative Target Search via Reinforcement Learning for Balanced Energy Consumption ..... 2373
*Cheng Zhang, Mengmeng Zhu*

Minimizing the Total Cost of Data Center Cooling: A Robust Multi-Objective Deep Reinforcement Learning Approach with Domain Randomization ..... 2379
*Mahdi Bonyani, Maryam Soleymani, Chao Wang*

Mixed Integer Optimization of Hawkes Process Networks with Applications to Reducing Police Use-Of-Force* ..... 2385
*Youness Diouane, George Mohler*

A variable sampling-time controller design approach for track-following control in high-performance tape drives ..... 2392
*Philippe Schuchert, Giovanni Cherubini, Ji Zhang*

Hierarchical Reinforcement Learning for Data Center Cooling Control: Decomposing Hybrid Action Spaces for Improved Energy Optimization ..... 2400
*Mahdi Bonyani, Maryam Soleymani, Chao Wang*

Highly Efficient Optimal Control for Lyophilization via Simulation of Discrete-Continuous Mixed-index Differential-algebraic Equations ..... 2406
*Prakitr Srisuma, Richard D. Braatz*

A Displacement Control of Uncertain Hybrid-Reluctance Actuator in Deformable Mirror for Adaptive Optics Application ..... 2412
*Mohammad Al Saaideh, Matthias Goy, Almuatazbellah Boker, Mohammad Al Janaideh*

RCBode Plot-Guided Improvement of Decoupled Control for Dual-Stage HDD Servo Systems ..... 2418
*Takenori Atsumi, Shota Yabui*

System Modeling and Control of a Five-Bar Mechanism with Variable Topology for Control Systems Education ..... 2424
*Luis A. Rodriguez, Addison Kopplin, Brian J. Slaboch, Tanner Vaculik*

Adaptive Strategies for Pension Fund Management ..... 2432
*Raphael Chinchilla, Thomas D. Rueter, Timothy R. McDade, Peter R. Fisher, Mykel J. Kochenderfer Emmanuel Candès, Trevor Hastie, Stephen Boyd*

Optimal Pairs Trading: A Mean-Variance Approach Incorporating a Stop-Loss Mechanism ..... 2440
*Ziyi Chen, Jia-Wen Gu*

Gain-Scheduled PID Controller for High-Precision Control of a 6-DoF Collaborative Manipulator ..... 2446
*Andrei A. Catalan, Daniel M. Yang, Alaeddin Bani Milhim*

Fractional-Order PI-PD Controller for Unstable Magnetic Levitation System ..... 2452
*Akanksha Dwivedi, Md Imran Kalim, Lalit Kumar Singh*

Online State Approximation via Fast Chebyshev Transform ..... 2458
*Arian Yousefian, Shahriar Talebi*

A Three-Step Estimator-Predictor Framework for Thermal Modeling and Disturbance Forecasting in Buildings ..... 2464
*Hossein Kalantar-Neyestanaki, Loren Dela Rosa, Matthew J. Ellis*

On the Least-Squares Identification for Hawkes Processes ..... 2470
*Xinhui Rong, Girish N. Nair*

Learning Hybrid Dynamics via Convex Optimization ..... 2476
*Kaito Iwasaki, Sangli Teng, Anthony Bloch, Maani Ghaffari*

A Numerical Comparison of Variable-Rate-Forgetting Methods for Recursive Least Squares ..... 2484
*Riley J. Richards, Jacob C. Vander Schaaf, Dennis S. Bernstein*

Incorporating Fixed-Pole Information in the Data-Driven Least Squares Realization Problem* ..... 2490
*Christof Vermeersch, Sibren Lagauw, Bart De Moor*

Integrated Control and Model Identification of Origami Reconfiguration ..... 2496
*Yuto Tanaka, Ran Dai, Luis Rodolfo Garcia Carrillo, Matthew Cleal, Andrew Sinclair*

Data to Certificate: Guaranteed Cost Control with Quantization-Aware System Identification ..... 2503
*Shahab Ataei, Dipankar Maity, Debdipta Goswami*

System Identification of Bedform Dynamics Using Mode Decomposition and Spectral Analysis ..... 2510
*Shakib Mustavee, Arvind Singh, Shaurya Agarwal*

Federated Nonlinear System Identification ..... 2516
*Omkar Tupe, Max Hartman, Lav R. Varshney, Saurav Prakash*

Task Space Tracking Control of Robot Manipulators: Tuner Adaptation Based Concurrent Learning Approach ..... 2522
*Irem Saka, Serhat Obuz, Enver Tatlicioglu, Zeki Gul, Erkan Zergeroglu*

Operator Approximations for Inverse Problems* ..... 2528
*Joel A. Rosenfeld, Benjamin P. Russo, Rushikesh Kamalapurkar*

Control of Fractional-Order Dynamical Systems using Kolmogorov–Arnold Networks ..... 2534
*Haowei Chen, Joel Rosenfeld, Tansel Yucelen, Rushikesh Kamalapurkar*

Identification of Koopman Models for Controlled Systems with Exogenous Noise * ..... 2540
*Moritz Woelk, Wentao Tang*

An Iterative Bayesian Approach for System Identification based on Linear Gaussian Models ..... 2546
*Alexandros E. Tzikas, Mykel J. Kochenderfer*

Online and Offline Space-Filling Input Design for Nonlinear System Identification: A Receding Horizon Control-Based Approach ..... 2553
*Max Heinz Herkersdorf, Oliver Nelles*

Automatic Regression for Governing Equations with Control (ARGOSc) ..... 2559
*Amir Bahador Javadi, Amin Kargarian, Mort Naraghi-Pour*

COPP: An Open-Source Ultra-Fast Library for Convex-Objective Path Parameterization ..... 2566
*Yunan Wang, Suqin He, Shize Lin, Chuxiong Hu*

Design and Modeling of a Heat Exchange Sleeve for Enhanced Thermal Safety of Lithium-Ion Batteries ..... 2567
*Patryck Ferreira, Shu-Xia Tang*

Reduced-Order Dynamics and Nonlinear Control of Listing-Constrained Eye Movements ..... 2568
*Yidi Huang, Qi Wei, Quentin Sanders, Ningshi Yao*

Multi-agent UAV navigation using a Particle Filter driven by magnetic anomaly gradients ..... 2569
*Dominik Pisarski, Rami Faraj, Łukasz Jankowski*

Resilient Safety-Aware Control Framework for Heterogeneous Multi-Agent Systems Under Cyberattacks ..... 2570
*Yichao Wang, Mohamadamin Rajabinezhad, Dimitra Panagou, Shan Zuo*

Privacy-Preserving, Safety-Aware, and Attack-Resilient Distributed Cooperative Control of AC Microgrids Unde Exponentially Unbounded FDI Attacks ..... 2571
*Mohamadamin Rajabinezhad, Nesa Shams, Yichao Wang, Yi Zhang, Shan Zuo*

On the Stratified Space Structure of a Deep RL Game ..... 2572
*Justin Curry, Brennan Lagasse, Ngoc B. Lam, Gregory Cox, David Rosenbluth, Alberto Speranzon*

Normal approximation of hidden layers using PCA ..... 2573
*Simon Kuang, Xinfan Lin*

Continuous-time B-spline Model Predictive Control on Linear Time Invariant Systems ..... 2574
*Curtis P. Evans, Randal W. Beard*

Misspecification in Model Predictive Games: Stability with Heterogeneous Objective Conjectures ..... 2575
*Ada Yildirim, Bryce L. Ferguson*

Nonlinear System Identification for Limited-Memory Settings ..... 2576
*Logan Anderson, Maziar Hemati, Ryan Caverly*

Spatio-Temporal Reconnection for Multi-Robot Networks Using Novel Prescribed-Time CBFs ..... 2577
*Hao Liu, Yupeng Yang, Yanze Zhang, Wenhao Luo*

Decoupled Linear-Nonlinear Control of the Human Oculomotor System ..... 2578
*Pouya Kassaeiyan, Amad Qureshi, Ningshi Yao, Qi Wei*

Adaptive Deadlock Avoidance for Decentralized Multi-agent Systems via CBF-inspired Risk Measurement ..... 2579
*Yanze Zhang, Siwon Jo, Yupeng Yang, Yiwei Lyu, Wenhao Luo*

Computationally and Sample Efficient Safe Reinforcement Learning Using Adaptive Conformal Prediction ..... 2580
*Hao Zhou, Yanze Zhang, Wenhao Luo*

Port-Transversal Bayesian Control Barrier Functions: Graph-Theoretic Safety for Learned Port-Hamiltonian Systems ..... 2581
*Chi Ho Leung, Philip E. Paré*

Comparison of Two Pose Estimation Schemes on SE(3) Using a Depth Camera Sensor ..... 2582
*Nazanin Safaei Hashkavaei, Neon Srinivasu, Amit K. Sanyal*

A Multi-Channel CEEMDAN-Driven Spatio-Temporal Graph Convolutional Network for EV Charging Demand Forecasting ..... 2583
*Mamunur Rashid, Nan Chen, Syed Ali Asad Rizvi*

Joint Prediction of Virtual Leader from Future Occupancy and Queue Theory in Autonomous Driving ..... 2584
*Zexuan Jia, Yunli Shao*

Hierarchical Submodular Optimization under Multi-Matroid Constraints: A Transportation Case Study ..... 2585
*Joan Vendrell Gallart, Nhat-Minh Tang-Nguyen, Alan Kuhnle, Solmaz Kia*

Global Convergence of Policy Gradient Methods for ReLU Controllers in Linear Quadratic Regulation ..... 2586
*Jhojan A. Rodriguez-Gil, César A. Uribe*

Lightweight Physics-Informed Reservoir Computing for Battery Health Prediction ..... 2587
*Kumar Anurag, Yanwen Xu, Wenbin Wan*

A Ray-Based Skew-Normal Transport Transform for Microscopic Control of VLSR Systems ..... 2588
*Jacob Lee, Chang Liu, Haroon Malik, Pingping Zhu*

Fault Classification in Rotating Machinery using Inverse Physics-Informed Neural Networks ..... 2589
*Saba Sanami, Amir G. Aghdam*

Energy Flow and Savings Analysis of Automated Vehicles with Different Powertrains ..... 2590
*Yuan Gao, Yunli Shao*

Distributed Voltage Tracking with RL-Based SoC Balancing in AC Microgrids ..... 2591
*Bernard Arhin, Syed Ali Asad Rizvi*

Adaptive Parameter Identification and Nonlinear Observer for SoC Estimation ..... 2592
*Md. Ebrahim Khallil, Syed Ali Asad Rizvi*

Graph-Based Modeling, Control, and Optimization for Multi-Domain and Multi-Timescale Energy Systems ..... 2593
*Joseph M. Pisani, Christopher T. Aksland, Philip M. Renkert, Joseph Broniszewski, Vismay Vyas Andrew G. Alleyne, Donald J. Docimo, Justin P. Koeln, Neera Jain, Herschel C. Pangborn*

Control Lyapunov-Barrier Function Design for Cislunar Rendezvous and Proximity Operations Using LiDAR-Based Estimation ..... 2611
*Seur Gi Jo, Justin Schmitt, David Canales, Axel Garcia*

Gaussian Mixture Square-Root Unscented Kalman Filtering on TSE(3) ..... 2617
*Marco Fagetti, Herman Gunter V, Morad Nazari*

Spectral Koopman Approach for Reconstructing State-space Geometry of Cislunar Restricted 3-Body Problem ..... 2623
*Subhrajit Sinha, Sriram S. K. S. Narayanan, Raktim Bhattacharya, Umesh Vaidya*

Efficient Input-Constrained Impulsive Optimal Control of Linear Systems with Application to Spacecraft Relative Motion ..... 2629
*Ethan Foss, Simone D'Amico*

An Adaptive Backstepping Geometric Control for Spacecraft Attitude Dynamics with Unknown Inertia Parameters ..... 2635
*Pierantonio Bertuccio, Jean-Luc Sarvadon, Mauro Mancini, Elisa Capello*

A Stackelberg Game Formulation for Satellite Intent Estimation ..... 2641
*Daniel Calderone, Alexander Soderlund, Meeko Oishi*

Resource Allocation in Adversarial Interactions: Introduction and Recent Advances in Colonel Blotto Games ..... 2649
*Keith Paarporn, Jason R. Marden, Gilberto Díaz-García, Dan Kovenock, Daigo Shishika*

Dissipativity-Based Distributed Control and Communication Topology Co-Design for DC Microgrids with ZIP Loads ..... 2659
*Mohammad Javad Najafirad, Shirantha Welikala*

Data-Driven Resilience Assessment against Sparse Sensor Attacks ..... 2667
*Takumi Shinohara, Karl Henrik Johansson, Henrik Sandberg*

Robust Distributed Nonconvex Optimization Enabling Communication Acceleration and Privacy Protection ..... 2673
*Zichong Ou, Jie Lu*

Asynchronous Nonlinear Sheaf Diffusion for Multi-Agent Coordination ..... 2679
*Yichen Zhao, Tyler Hanks, Hans Riess, Samuel Cohen, Matthew Hale, James Fairbanks*

Identifying Network Structure of Nonlinear Dynamical Systems: Contraction and Kuramoto Oscillators ..... 2687
*Jaidev Gill, Jing Shuang Lisa Li*

ADAPT Planner: Adaptive Dual Control for Active Planning Under Traction Uncertainty ..... 2693
*Vasudev Purohit, Robert Prucka, Matthew P. Castanier, Miriam Figueroa-Santos, Morgan Barron Qilun Zhu*

Model Predictive Energy Management of a Parallel Electric-Hydraulic Hybrid Vehicle ..... 2699
*Amirhossein Taaghi, Yongsoon Yoon*

Raceline-Informed Envelope Model Predictive Control for Autonomous Racing ..... 2705
*Yingxuan Guo, Hanyu Gan, Siyuan Yu, Congkai Shen, Tulga Ersal*

Adaptive Model-Free Vehicle Path-Tracking via Fast-Converging Prescribed-Time Newton-Based Extremum-Seeking Control ..... 2712
*Muhammad Waleed Khan, Anye Zhou, Jianfei Max Chen, Adian Cook, Joe Beck, Qadeer Ahmed Zejiang Wang*

Benchmarking Interpretable Reinforcement Learning for Energy and Emission Management in Heavy-Duty Hybrid Electric Vehicles Using Stochastic Dynamic Programming ..... 2718
*Shizhao Yang, Robert Prucka, Qilun Zhu*

Reinforcement Learning Compensated Model Predictive Control for Off-road Driving on Unknown Deformable Terrain ..... 2724
*Prakhar Gupta, Jonathon M. Smereka, Yunyi Jia*

Multi-Dancer: A Collaborative Multi-Agent Reinforcement Learning Framework for Mitigating Congestion in Traffic Signal Control ..... 2731
*Wenlu Du, Jing Li, Guiling Grace Wang*

Decentralized and Asynchronous Trajectory Planning for Heterogeneous Multi-Vehicle Systems Using Risk Assessment and Chance Constraints ..... 2739
*Zehao Wang, Junmin Wang*

Negotiating Highway Interchange Traffic with a Decentralized Instability-Driven CBF-based Algorithm ..... 2745
*Mrdjan Jankovic, Shreshta Rajakumar Deshpande, Gopika Ajaykumar*

Decentralized Merging Control of Connected and Automated Vehicles to Enhance Safety and Energy Efficiency using Control Barrier Functions ..... 2752
*Shreshta Rajakumar Deshpande, Mrdjan Jankovic*

Computationally Efficient Energy-Optimal Control of Automated Vehicles with Virtual Leader Prediction in Urban Traffic ..... 2760
*Yunli Shao*

Enhanced Multi-Agent Reinforcement Learning for Mixed-Traffic On-Ramp Merging with Risk and Energy-Aware Reward ..... 2766
*Josh Andrew Elma Ramos, Zejiang Wang*

Assured Fault Detection: Is Cell-level Temperature Sensing Worth It? ..... 2772
*Xin Hui Ooi, Hamidreza Movahedi, Jason B. Siegel, Anna G. Stefanopoulou, Wan Si Tang, Vallabha Rikka*

ADMM-based Mobility-aware Electric Vehicle Charging Coordination for Regional Grid Resilience ..... 2778
*Yi Ju, Lunlong Li, Jingchun Wang, Scott Moura*

Modeling and Estimation of Solid Electrolyte Interphase during Formation in Battery Manufacturing ..... 2785
*Zhiwen Wan, Hamidreza Movahedi, Wenxue Liu, Jingchen Ma, Jason B. Siegel, Andrew Weng Anna Stefanopoulou*

KAN-Koopman Based Rapid Detection Of Battery Thermal Anomalies With Diagnostics Guarantees ..... 2791
*Sanchita Ghosh, Tanushree Roy*

Electrochemical Fault Diagnosis for Lithium-Ion Batteries: Part 1 – Electrochemical Fault Modeling ..... 2797
*Sara Sepasiahooyi, Shu-Xia Tang*

Electrochemical Fault Diagnosis for Lithium-Ion Batteries: Part 2 – Distributed Fault Diagnosis ..... 2803
*Sara Sepasiahooyi, Shu-Xia Tang*

Neural Network- and Lyapunov-Based Control of an Uncertain Telerobotic Rehabilitation System With Communication Delays†‡ ..... 2809
*Rukesh Gusain, Kislaya Mishra, Jonathan Ting, Brendon C. Allen*

Deep Neural Network Based Reference Tracking for Discrete-time Multi-agent Systems with Input Delay ..... 2815
*Da Zhang, Yusheng Wei*

Time-Transformation-Based Analysis of Systems with Periodic Delay via Perturbative Expansion ..... 2821
*Jungbae Chun, Sengiyumva Kisole, Matthew M. Peet, Peter Seiler*

Sliding Mode Event-Triggered Control under State Delays and Perturbations* ..... 2827
*Michael Malisoff, Anton Selivanov*

Observer Design for Strong Observable and Strong Detectable Systems with Time Delays and Unknown Inputs ..... 2833
*Jesús Alberto Suárez, Francisco Javier Bejarano*

3D Simultaneous Coverage Control and Object Alignment using a Camera-equipped Unmanned Ground Vehicle ..... 2839
*Aayush Rai, Yue Wang*

Optimal Control of Information Diffusion in Robot Swarms via a Policy-Driven SIR Model ..... 2845
*Yanjing Huang, Hao Gao, Xianzhe Cheng, Yiding Ji, Yun Gao*

Group-based Representation and Dimensionality Reduction in Robot Crowd Navigation ..... 2851
*Mohamad Alrished, Saleh Albeaik, Kamal Youcef-Toumi*

MUFM-RPL: Multi-UAV Flow Matching for Distributed Ergodic Coverage with Residual Policy Learning ..... 2859
*Hao Gao, Yanjing Huang, Siyi Zhou, Yang Shi, Yun Gao*

Compositional environmentally robust control barrier function for avoiding multiple dynamic obstacles ..... 2865
*Tran Quang Huy, Yen-Chen Liu*

Mind the Gaps: Multi-Robot Feedback-Driven Ergodic Coverage in Unknown Environments ..... 2871
*Thales C. Silva, Nora Ayanian*

Upper bound of transient growth in accelerating and decelerating wall-driven flows using the Lyapunov method ..... 2877
*Zhengyang Wei, Weichen Zhao, Chang Liu*

Stability Analysis of Thermohaline Convection With a Time-Varying Shear Flow Using the Lyapunov Method ..... 2883
*Kalin Kochnev, Chang Liu*

On the Computation of Dwell Time for Switched LTV Systems with Variable State Dimension ..... 2889
*Richard T. O'Brien, Matthew C. Turner*

Polynomial Chaos-based Input Shaper Design under Time-Varying Uncertainty ..... 2895
*Johannes Güttler, Karan Baker, Premjit Saha, James Warner, Adrian Stein*

DCATS: A dual decentralized coordinate ascent algorithm for potentially disconnected time-varying graphs ..... 2901
*Ning Fang, Bicheng Ying, Xin Jiang*

Variance-Reduced Q-Learning over Static and Time-Varying Networks ..... 2907
*Sreejeet Maity, Feng Zhu, Aritra Mitra, Robert W. Heath*

A Scalable Design Approach to Resilient Architectures for Interconnected Cyber-Physical Systems: Safety Guarantees under Multiple Attacks ..... 2915
*Eman Badr, Abdullah Al Maruf*

Banach Control Barrier Functions for Large-Scale Swarm Control ..... 2923
*Xuting Gao, Guillem Pascual, Scott Brown, Sonia Martínez*

Scalable Incremental Input-to-State Stability for Multi-Agent Systems with Nonlinear Dynamics affected by Disturbances ..... 2929
*Leonardo Duarte Vargas, Alessio Iovine, Cristina Stoica*

Networked Control and Mean Field Problems Under Diagonal Dominance: Decentralized and Social Optimality ..... 2935
*Vivek Khatana, Duo Wang, Petros Voulgaris, Nicola Elia, Naira Hovakimyan*

Why Density Estimators Are Biased: From KDE to Neural Networks and Transformers in Nemytskii Mean-Field-Type Games ..... 2941
*Hamidou Tembine*

Assumed density filtering with sinusoidal residual networks ..... 2947
*Simon Kuang, Xinfan Lin*

Control-oriented Learning Nonlinear Systems using Lyapunov Stable Guaranteed Soft-bodied Physical Reservoir Computing ..... 2953
*Mahdi Haghshenas-Jaryani*

Combining Large Language Models and Gradient-Free Optimization for Automatic Control Policy Synthesis ..... 2959
*Carlo Bosio, Matteo Guarrera, Alberto Sangiovanni-Vincentelli, Mark W. Mueller*

Stability Analysis of the Discrete-Time Kalman Predictor for Linear, Time-Varying Systems ..... 2967
*Mohammadreza Kamaldar, S. A. U. Islam, Dennis S. Bernstein*

Real-Time Extended Object Tracking via Linearized Gaussian Process Implicit Surfaces ..... 2973
*Eugen Ernst, Florian Pfaff*

Distributed Invariant Unscented Kalman Filter based on Inverse Covariance Intersection with Intermittent Measurements ..... 2981
*Zhian Ruan, Yizhi Zhou*

Design Guidelines for Nonlinear Kalman Filters via Covariance Compensation ..... 2987
*Shida Jiang, Jaewoong Lee, Shengyu Tao, Scott Moura*

Reducing Observation Linearization Errors of the Extended Kalman Filter via Adaptation ..... 2995
*Maryam Saberi, Donald Ebeigbe*

NDKF: A Neural-Enhanced Distributed Kalman Filter for Nonlinear Multi-Sensor Estimation ..... 3001
*Siavash Farzan, Bennett Parisi*

On the (almost) global exponential convergence of overparameterized policy optimization for the LQR Problem ..... 3009
*Moh Kamalul Wafi, Arthur C. B. de Oliveira, Eduardo D. Sontag*

Small-Covariance Noise-to-State Stability of Stochastic Systems and Its Applications to Stochastic Gradient Dynamics ..... 3015
*Leilei Cui, Zhong-Ping Jiang, Eduardo D. Sontag*

Encrypted Neural Network Modeling and Predictive Control of Nonlinear Systems with Privacy and Stability Guarantees ..... 3021
*Xiangyin Kong, Zhe Wu*

Reservoir Computing with Hybrid Systems: the Echo State Property ..... 3028
*Michael McCreesh, Arnau Marzabal, Akila Ganlath, Rohit Gupta, Justin Sanchez, Jorge Cortés*

Contracting Dynamics Can Be Efficiently Parallelized ..... 3034
*Leo Kozachkov, Xavier Gonzalez, David M. Zoltowski, Kenneth L. Clarkson, Scott W. Linderman*

Paradoxical Control Enables Robust Perceptron Weights in Population-Level Biological Neural Networks ..... 3042
*Valerie A. Pérez-Medina, Mohini Misra, Michaëlle N. Mayalu*

On the implications of finite cellular resources for engineering the dynamics of two-gene control motifs in synthetic biology ..... 3048
*Tea A.C. Clark, Mathias Foo, Alexander P.S. Darlington*

Learning Genetic Circuit Modules with Neural Networks ..... 3054
*Jichi Wang, Eduardo D. Sontag, Domitilla Del Vecchio*

Modeling and Control of Average Global Supercoiling Dynamics ..... 3060
*Harris Clark, Cole Giusto, Raaghav Thirumaligai, Enoch Yeung*

Analysis of RRT* For Resource Constrained Path Planning Problems† ..... 3068
*Jonathan Martin, Bryce Ford, Mrinal Kumar*

Resource-Aware Rate-Adaptive Control with Discrete-Time Control Barrier Functions and Real-Time Guarantees ..... 3074
*Marcello Domenighini, Paolo Pazzaglia, Christoph Mark, Kevin Schmidt, Laura Beermann Alessandro V. Papadopoulos*

HyperSNN: A new efficient and robust deep learning model for resource constrained control applications ..... 3081
*Zhanglu Yan, Shida Wang, Kaiwen Tang, Zhenyu Bai, Weng-Fai Wong*

DARRMS - An Efficient Algorithm for Dynamic Attention Radius in Resource-Constrained Multi-Agent Systems ..... 3089
*Benjamin Alcorn, Eman Hammad*

Dynamic Information Acquisition under Rational Inattention ..... 3095
*Hadis Arefanjazi, Emrah Akyol*

Performance and Resource Trade-offs in Multi-Rate Sensor Fusion on A Predictable Multi-Processor Platform ..... 3101
*Chaitanya Jugade, Martijn Koedam, Sajid Mohamed, Andrew Nelson, Dip Goswami, Kees Goossens*

End-to-End Training of High-Dimensional Optimal Control with Implicit Hamiltonians via Jacobian-Free Backpropagation ..... 3109
*Eric Gelphman, Deepanshu Verma, Nicole Tianjiao Yang, Stanley Osher, Samy Wu Fung*

Optimal Production Planning and Waste Collection in Additive Manufacturing ..... 3117
*Najibeh Bakhshi Chanzagh, Olorunfunmi Olamilekan Osinubi, Shuo Wang*

Time-Optimal Switching Surfaces for Triple Integrator Under Full Box Constraints ..... 3123
*Yunan Wang, Chuxiong Hu, Zhao Jin*

Regularized Model Predictive Control* ..... 3129
*Komeil Nosrati, Juri Belikov, Aleksei Tepljakov, Eduard Petlenkov*

Asynchronous Model Predictive Control for Large Interconnected Systems with External Disturbance ..... 3135
*Jun Chen, Chong Li*

Stochastic Minimum-Fuel Output Model Predictive Control with Finite-Time Completion ..... 3141
*Afonso Botelho, Paulo Rosa, João M. Lemos*

Direct Data-driven Predictive Control: A Computationally Efficient Alternative to DeePC for Eco-driving in Mixed Traffic Flows ..... 3147
*Dongjun Li, Haoxuan Dong, Liangcai Xu, Ziyou Song*

linrax: A JAX Compatible, Simplex Method Linear Program Solver ..... 3153
*Brendan Gould, Akash Harapanahalli, Samuel Coogan*

Adaptive Branch-and-Bound Iterations for Mixed-Integer Quadratic MPC ..... 3159
*Luke Fina, Christopher Petersen*

A Backtracking Step Size Algorithm for Distributed Convex Optimization ..... 3165
*Ju Dong, Lixing Yang, Qingzhi Yang*

Accelerated Sequential Linear Programming via Feasible Hyper-Rectangular Trust Regions ..... 3171
*Dorijan Leko, Ninoslav Čerkez, Mario Vašak*

Applying Semidefinite Relaxation to Optimal Efficiency Reference Generation for Wound Rotor Synchronous Machines ..... 3179
*Maxfield Parson-Scherban, Bernard Steyaert, Ethan Swint, W. Wesley Pennington, Matthias Preindl*

Optimal Time Scheduling for a Simple Reparable System ..... 3185
*Daniel Owusu Adu, Alexander Jay Brower, Weiwei Hu, Hao-Ning Wu*

Two-Dimensional Boundary Control of Tubular Reactors ..... 3191
*Mahdis Akbarnezhad, Charles R. Koch, Stevan Dubljevic*

Performance-Aware Fault-Tolerant Control of Spatially Distributed Processes with Constrained Sensing and Communication ..... 3197
*Ananya Iyer, Nael H. El-Farra*

Constraint-based trajectory tracking for hyperelastic flexible systems via port-Hamiltonian DAEs ..... 3203
*Cristobal Ponce, Yongxin Wu, Hector Ramirez, Yann Le Gorrec*

Linear Quadratic Regulation for First Order Hyperbolic PDEs* ..... 3209
*Arthur J. Krener*

Sequence Aware Soft Actor-Critic Control Agents for Series Electrified Powertrain ..... 3215
*Wafeeq Jaleel, Md Ragib Rownak, Athar Hanif, Sidra Ghayour Bhatti, Qadeer Ahmed*

Realizing Optimal Bidding and Budget Allocation with Constraints in Programmatic Advertising ..... 3221
*William Hafner, Alexander Schaefer, Victor Amin, Sunil Ahuja*

Computing Control Directions for Discrete-Time Systems with Disturbances* ..... 3229
*Frédéric Mazenc, Michael Malisoff*

Adaptive Control Allocation for Underactuated Time-Scale Separated Non-Affine Systems ..... 3235
*Daniel M. Cherenson, Dimitra Panagou*

Nested Extremum Seeking Converges to Nash Equilibrium ..... 3243
*Brad Ratto, Alan Williams, Miroslav Krstić, Alexander Scheinker*

On Online Control of Opinion Dynamics ..... 3250
*Sheryl Paul, Leslie Cruz Juarez, Jyotirmoy V. Deshmukh, Ketan Savla*

Online Policy Iterations for Continuous-time Optimal Tracking Problems using Single Network Adaptive Critic ..... 3256
*Randal Engelhardt, Tohid Sardarmehni*

Collaborative Indirect Influencing and Control on Graphs using Graph Neural Networks ..... 3262
*Max L. Gardenswartz, Brandon C. Fallin, Cristian F. Nino, Warren E. Dixon*

Event-Driven Safe and Resilient Control of Automated and Human-Driven Vehicles under EU-FDI Attacks ..... 3268
*Yi Zhang, Yichao Wang, Wei Xiao, Mohamadamin Rajabinezhad, Shan Zuo*

Adaptive Control and Control Allocation of Uncertain Over-Actuated Systems with Nonlinear Reference Models ..... 3276
*Andrew Bray, Eren Sarioglu, K. Merve Dogan*

Sensor-Noise Mitigation in Extremum Seeking Control Using Adaptive Numerical Differentiation ..... 3282
*Shashank Verma, Juan Augusto Paredes Salazar, Jhon Manuel Portella Delgado, Ankit Goel*
*Dennis S. Bernstein*

Online Model Discrimination Using Dual Model Predictive Path Integral Control ..... 3288
*Vasudev Purohit, Robert Prucka, Matthew P. Castanier, Miriam Figueroa-Santos, Morgan Barron Qilun Zhu*

Discrete-Time Model Reference Adaptive Control of Uncertain Fully-Actuated Systems in the Presence of Unknown Control Effectiveness ..... 3294
*Nathaniel Sisson, Thitiphun Vongkunghae, K. Merve Dogan*

Tobit Kalman Filter and Neuro-Dynamic Inversion Adaptive Control for GNSS/INS Navigation under Censored Measurements ..... 3300
*Sarocha Jetawatthana, Thanakorn Khamvilai*

Distributed and Consistent Multi-Robot Visual-Inertial-Ranging Odometry on Lie Groups ..... 3306
*Ziwei Kang, Yizhi Zhou*

GRU-Based Estimation Model for Bearings-Only Tracking ..... 3312
*Xu Huang, Yuan Feng, Yang Zhang, Ming Xin*

Delayed Norm-Constrained Augmented Kalman Filter: A Selector-Matrix Approach for Quaternion Norm Adherence ..... 3318
*Hamed Mozaffari, Arman Dabiri*

Natural Gradient Gaussian Approximation Filter with Positive Definiteness Guarantee ..... 3324
*Tianyi Zhang, Wenhan Cao, Shengbo Eben Li*

Linear quadratic control for discrete-time systems with stochastic and bounded noises ..... 3330
*Xuehui Ma, Shiliang Zhang, Xiaohui Zhang, Jing Xin, Hector Garcia de Marina*

Pose Estimation of a Thruster-Driven Bioinspired Multi-Link Robot* ..... 3338
*Nicholas B. Andrews, Yanhao Yang, Sofya Akhetova, Kristi A. Morgansen, Ross L. Hatton*

Conditional Graph Variational Autoencoder for Generation of Class-Conditioned Spatial Data ..... 3346
*Akanksh Shetty, Deepak Antony David, Luke Busse, Manish Kumar*

An Adaptive Fuzzy Logic Based Uncertainty Estimator for the Modeling Uncertainties of Super Coiled Polymer Actuators ..... 3352
*Cagri Hindistan, B. Melih Yilmaz, Erman Selim, Enver Tatlicioglu, Erkan Zergeroglu*

Data-Driven Estimation of Quadrotor Motor Efficiency via Residual Minimization ..... 3358
*Sheng-Wen Cheng, Teng-Hu Cheng*

A Generalized Synthetic Control Method for Baseline Estimation in Demand Response Services ..... 3366
*Jonas Sievers, Mardavij Roozbehani*

Particle Filter Based Real-Time Multi-Modal Human Intention Prediction ..... 3372
*Abdullatif Al Alsheikh, Xiaotong Zhang, Kamal Youcef-Toumi*

Robust Sensor Placement for Poisson Arrivals under False-Alarm-Aware Spatiotemporal Sensing ..... 3378
*Mingyu Kim, Pronoy Sarker, Seungmo Kim, Daniel J. Stilwell, Jorge Jimenez*

Robust Cislunar Navigation via LFT-Based H∞ Filtering with Bearing-Only Measurements ..... 3386
*Raktim Bhattacharya*

Learning Safety–Compatible Observers for Unknown Systems ..... 3392
*Juho Bae, Daegyeong Roh, Han-Lim Choi*

A Tutorial for Foundations in AI and Quantum Systems: From Control and Game-Theory to Stochastic Deception ..... 3400
*Kyriakos G. Vamvoudakis, Jorge I. Poveda, Sean Anderson, João P. Hespanha, Miroslav Krstic Ian R. Petersen, Michael Tang, Ali Wadi, Quanyan Zhu*

Safe Landing on Small Celestial Bodies with Gravitational Uncertainty Using Disturbance Estimation and Control Barrier Functions ..... 3418
*Felipe Arenas-Uribe, T. Michael Seigler, Jesse B. Hoagg*

Perception-Integrated Safety Critical Control via Analytic Collision Cone Barrier Functions on 3D Gaussian Splatting ..... 3424
*Dario Tscholl, Yashwanth Nakka, Brian Gunter*

Analysis and Flight Validation of Momentum-Biased Attitude Stability During Open-Loop Deployment on NISAR * ..... 3430
*Aditya Rallapalli, Ashok Kakula, Martin Cacan, David M Bates, Oscar Salazar Alvarez*

Gradient-Based Constrained Spacecraft Trajectory Optimization with Convergence Guarantees ..... 3438
*Yifei Zheng, Peter M. Dower, William M. McEneaney*

Convex Sum-of-Squares Controller Design for Relative Orbital Motion About Circular Chief Orbits ..... 3445
*Jose D. Hoyos, Sidhdharth D. Sikka, Ayush Rai, Shaoshuai Mou*

Control via Incentives and Information in Socio-technical Systems: A Tutorial ..... 3451
*Tamer Başar, Subhonmesh Bose, Philip Brown, Chih-Yuan Chiu, Bryce L. Ferguson, Chinmay Maheshwari Ketan Savla, Raj Kiriti Velicheti, Manxi Wu*

Generating Differentially Private Networks with a Modified Erdős-Rényi Model ..... 3467
*Huaiyuan Rao, Calvin Hawkins, Alexander Benvenuti, Matthew Hale*

The Tragedy of the Commons in Multi-Population Resource Games ..... 3473
*Yamin Vahmian, Keith Paarporn*

A Passivity-Agnostic Framework for Distributed Adaptive Synchronization under Unknown Leader Dynamics ..... 3479
*Moh Kamalul Wafi, Hamidreza M. Hedesh, Milad Siami*

Regulation of Rumor Propagation via (Multi-Leader) Stackelberg Graphon Games ..... 3486
*Huaning Liu, Gökçe Dayanıklı*

Finding Super-spreaders in SIS Epidemics ..... 3494
*Anirudh Sridhar, Arnob Ghosh*

Bounds of Validity for Bifurcations of Equilibria in a Class of Networked Dynamical Systems ..... 3500
*Pranav Gupta, Ravi Banavar, Anastasia Bizyaeva*

Design of a Sensorless Trailer Anti-lock Braking System based on Trailer Swing Detection ..... 3507
*Semin Jeong, Jiyeol Oh, Seibum B. Choi*

On the Importance of Slip Angle Estimation for Accurate Target Vehicle Tracking ..... 3513
*Hongjoon Kyong, Hamidreza Alai, Ehsan Kazemi Tameh, Rajesh Rajamani*

Observer Design for Vector Nonlinear System with Application to Vehicle Tracking* ..... 3519
*Gaurav Sharma, Ali Zemouche, Rajesh Rajamani*

A Regenerative Braking Framework for Intent-based Platooning in Real-World Traffic Situations ..... 3525
*Sachin Sharma, Ahmadreza Moradipari, Sergei Avedisov, Shatadal Mishra, Mariam Nour*

Bayesian Optimization for ADAS Development: Balancing Safety and Comfort in an AEB Use Case ..... 3532
*Solano R. Caiano, Ygor L. Galbier, Leimar Mafort, Jian Tang*

Lateral String Stability for Vehicle Platoons ..... 3538
*Sixu Li, Swaroop Darbha, Yang Zhou*

Aligning LLMs with Human Comfort Preferences in Human-Robot Collaboration via Comfort-Guided Supervised Fine-Tuning ..... 3544
*Yuchen Yan, Yunyi Jia*

Energy-Based Scheduling for Collaborative Robot Mobility ..... 3551
*Alexander A. Nguyen, Faryar Jabbari, Magnus Egerstedt*

A Generalized Voronoi Graph based Coverage Control Approach for Non-Convex Environment ..... 3557
*Zuyi Guo, Ronghao Zheng, Meiqin Liu, Senlin Zhang*

Formation Control via Rotation Symmetry Constraints ..... 3563
*Zamir Martinez, Daniel Zelazo*

An Integrated Design of Robust $\mathcal{H}_\infty$ Control with Proximal Policy Optimization for the Cooperation of Robot Vehicles ..... 3569
*Attila Lelkó, Balázs Németh, Péter Gáspár*

Multi-Robot Allocation for Information Gathering in Non-uniform Spatiotemporal Environments ..... 3575
*Kaleb Ben Naveed, Haejoon Lee, Dimitra Panagou*

Combined State and Parameter Estimation in Parallel-Connected Lithium-ion Battery Cells ..... 3583
*Jorge Espin, Dong Zhang*

Machine Learning Detection of Lithium Plating in Lithium-ion Cells: A Gaussian Process Approach ..... 3589
*Ayush Patnaik, Jackson Fogelquist, Adam B. Zufall, Yiwei Ji, Stephen K. Robinson, Peng Bai, Xinfan Lin*

Pulse-based Continual Learning (PCL) for Second-life Battery SOH Estimation without Catastrophic Forgetting under Data Heterogeneity and Scarcity ..... 3595
*Shengyu Tao, Yezhen Wang, Shida Jiang, Jeawoong Lee, Scott Moura, Xuan Zhang, Changfu Zou*

Multi-goal Mission Planning in Windy Environments Using Boundary Expansion Estimates of Reachable Regions ..... 3602
*Kaelea E. Hayes, Herschel C. Pangborn, Sean N. Brennan*

Sparse-Frequency EIS Measurements and Impedance Spectrum Reconstruction for Lithium-ion Cell Modeling ..... 3609
*Timothy D. Morgan, Avimanyu Sahoo*

A Physics-Informed Neural-Network Model for Rechargeable Thick-Electrode Lithium-Metal Battery Cells that is Accurate at High C-Rate ..... 3615
*Wesley Hileman, Byeong Kil Lee, M. Scott Trimboli, Gregory L. Plett*

DC Shipboard Microgrid Control Using Online Multilayer Neural Network Lifelong Learning ..... 3621
*Md Tanvir Shahed, B. Farzanegan, S. Jagannathan*

Learning-Augmented Primal-Dual Control Design for Secondary Frequency Regulation ..... 3627
*Yixuan Yu, Rajni K. Bansal, Yan Jiang, Pengcheng You*

Improved Voltage Regulation with Optimal Design of Decentralized Volt-VAr Control ..... 3633
*Daniel J. Russell, Dakota Hamilton, Mads R. Almassalkhi, Hamid R. Ossareh*

A Spatio-Temporal Attention and Transformer Framework for Hybrid Attack Detection in Cyber-Physical Systems ..... 3641
*Clement Kai Xuen Lau, Jing Wu, Chengnian Long*

Microgrids Optimal Radial Reconfiguration and Islanding via FORWARD Algorithm ..... 3647
*Joan Vendrell, Russell Bent, Solmaz Kia*

Dynamic Modeling and Control of a Parabolic Trough Solar Collection Line for Power Generation* ..... 3653
*Luis J. Yebra, R. Russell Rhinehart*

Learning Human Gait with Muscle Control and Metabolic Cost Integration ..... 3659
*Nadine Drewing, Firas Al-Hafez, Guoping Zhao, Jan Peters, André Seyfarth, Rolf Findeisen Maziar A. Sharbafi*

Enhanced-Balance Stabilization of Underactuated Robots with Learned Equilibrium Manifold ..... 3665
*Lixuan Chan, Feng Han*

Modeling and Control of Multirotor Aerial Vehicles with Telescoping Extension Arm Morphology ..... 3671
*Samuel A. Dauchert, Xin Zhang, Nicholas M. Stiffler, Xiaofeng Wang*

Synergy-Driven Prosthetic Hand Control for Dexterous In-Hand Manipulation ..... 3677
*Chu Wang, Alireza Mohammadi, Jonathan Eden, Ying Tan, Peter F. Choong, Denny Oetomo*

Control Separation and Coordination of Trajectory Tracking and Balance Stabilization for Underactuated Balance Robots ..... 3685
*Feng Han*

Force-augmented LIPM–MPC for Stable Humanoid Loco–Manipulation ..... 3691
*Baekseok Kim, Paul Oh*

Efficient Robustness Verification for Non-Blocking Discrete Event Systems ..... 3697
*Md. Nur-A-Adam Dony, Syed Ali Asad Rizvi*

Multiple Global Secrets Protection in Discrete Event Systems via Integer Linear Programming ..... 3703
*Ruotian Liu, Wei Duan, Shaopeng Hu, Agostino Marcello Mangini, Maria Pia Fanti*

Modular Control for Critical Observability and Weak Opacity in Discrete Event Systems ..... 3709
*Shaowen Miao, Jan Komenda, Yiding Ji, Xiang Yin*

Well-Posedness and Stability Analysis of Positive System Networks under Link-Dependent Delays ..... 3715
*Madeleine Bell, Abdelhafid Zenati, Nabil Aouf*

Fully Distributed GNE Algorithms for Multi-Robot Placement without Consensus on Multipliers ..... 3721
*Sho-An Yin, Mingyi Hong, Nicola Elia*

Feature-Based Perception-Aware Multi-UAV Trajectory Planning ..... 3727
*Teaya Yang, Christian Brommer, Mark W. Mueller*

Dynamic Coalitions in Games on Graphs with Preferences over Temporal Goals ..... 3735
*And Kaan Ata Yilmaz, Abhishek Kulkarni, Ufuk Topcu*

Control of Heterogeneous Multi-Agent Systems with Active Leader ..... 3743
*Yicheng Xu, Faryar Jabbari*

Distributed Model Predictive Control with Delay for Formation of Multi-Agent Systems ..... 3749
*Ming-Li Chiang, Qi-Hong Yang*

Data-Driven Min-Max Strategy for Multiplayer Multiagent Systems ..... 3755
*Yizhong Zhang, Christopher Colon, Bosen Lian*

Diffusion-Based Decentralized Federated Multi-Task Representation Learning ..... 3761
*Donghwa Kang, Shana Moothedath*

Sliced Distribution Matching based on Cumulative Distribution Functions with Applications to Control ..... 3767
*Alexandros E. Tzikas, Arec Jamgochian, Nazim Kemal Ure, Mykel J. Kochenderfer, Stephen P. Boyd*

CHMAS: A Coupled Hierarchical Framework for Multi-Agent Reinforcement Learning ..... 3775
*Dongming Wang, Jie Xu, Yanyu Zhang, Wei Ren*

Density-Ratio Weighted Behavioral Cloning: Learning Control Policies from Corrupted Datasets ..... 3781
*Shriram Karpoora Sundara Pandian, Ali Baheri*

Debiased GPT in Mean-Field-Type Games ..... 3787
*Hamidou Tembine*

A Lyapunov-Based Small-Gain Theorem for Fixed-Time Stability ..... 3793
*Michael Tang, Miroslav Krstic, Jorge Poveda*

Period-Aware Asymptotic Gain with Application to a Periodically Forced Synchronization Circuit ..... 3801
*Anton Ponomarev, Lutz Gröll, Veit Hagenmeyer*

A Converse Control Lyapunov Theorem for Joint Safety and Stability ..... 3809
*Thanin Quartz, Maxwell Fitzsimmons, Jun Liu*

Control Oriented Real-Time Nonlinear Dynamic Pseudo Inverse for Non-minimum Phase Systems ..... 3815
*Miguel Sempertegui, J. Jim Zhu, Douglas Lawrence*

Forward and Backward Reachability Analysis of Closed-loop Recurrent Neural Networks via Hybrid Zonotopes ..... 3821
*Yuhao Zhang, Xiangru Xu*

Safety-Critical Adaptive Spiking Multilayer Neural Control of Nonlinear Systems ..... 3827
*Irfan Ganie, Sarangapani Jagannathan*

TRASE-NODEs: Trajectory Sensitivity-aware Neural Ordinary Differential Equations for Efficient Dynamic Modeling ..... 3833
*Fatima Al-Janahi, Min-Seung Ko, Hao Zhu*

Exact Minimal Perturbations to Quantify Robustness of Neural Networks ..... 3839
*Justin Chen, Justin Ruths*

Neural Hybrid Equations: Models, Basic Properties, and Approximation Results ..... 3845
*Daniel E. Ochoa, Ricardo G. Sanfelice*

Belief Space Control of Safety-Critical Systems Under State-Dependent Measurement Noise ..... 3851
*Rohan Walia, Mitchell Black, Andrew Schoer, Kevin Leahy*

Chance-Constrained Covariance Steering for Discrete-Time Markov Jump Linear Systems ..... 3859
*Shaurya Shrivastava, Kenshiro Oguri*

Stabilization and Optimality of Pursuer and Evader Policies for Stochastic Differential Games ..... 3865
*Wassim M. Haddad, Ronit Chitre*

Partial Stability and Optimal Control for Stochastic Dynamical Systems ..... 3871
*Wassim M. Haddad, Ronit Chitre*

Stochastic Model Predictive Control for Colloidal Self-Assembly: a Markov State Model-based Case Study ..... 3877
*Jingzhi Rao, Wei Sun, Xun Tang*

Data-Conforming Model-Free Stochastic Reinforcement Learning ..... 3883
*Surabhi Athalye, Mohammad S. Ramadan, Mihai Anitescu, Kyriakos G. Vamvoudakis*

Progress-Based Fault Detection and Health-Aware Task Allocation for Heterogeneous Multi-Robot Systems ..... 3889
*Jack Cline, Christian Macaranas, Siavash Farzan*

Estimation of unknown inputs for singular systems: application to fault detection ..... 3896
*Roberto Correu Olivares, Francisco Javier Bejarano*

Early Fault Detection and Diagnosis in Closed-Loop Control Systems Using Relay Feedback Limit Cycles ..... 3902
*Yogesh P. Chaudhari, Somanath Majhi*

Sensor and Threshold Selection for Safe Fault Detection ..... 3908
*Andrew Clark, Shiyu Cheng*

Data-Driven, Redundancy-Free Fault-Tolerant Inertial Navigation System Based on Sensor-to-Sensor Identification ..... 3914
*Odai R. Bani Hani, Mohammad Al Janaideh, Khaled F. Aljanaideh*

Fundamental limitations of sensitivity metrics for anomaly impact analysis in LTI systems ..... 3920
*Jingwei Dong, Kangkang Zhang, Anh Tung Nguyen, André M. H. Teixeira*

A Sequential Quadratic Programming Perspective on Optimal Control ..... 3926
*Abhijeet, Suman Chakravorty*

Optimal Optical Inter-Satellite Link Tracking via Gauss-Seidel and Riccati Iterations ..... 3932
*Daniel J. Garcia, Claus Danielson*

Predictive Control Barrier Functions for Discrete-Time Linear Systems with Unmodeled Delays ..... 3940
*Juan Augusto Paredes Salazar, James Usevitch, Ankit Goel*

Sampling-Based Global Optimal Control and Estimation via Semidefinite Programming ..... 3946
*Antoine Groudiev, Fabian Schramm, Éloïse Berthier, Justin Carpentier, Frederike Dümbgen*

Optimal Finite-Thrust Maneuver Augmentation for Aerobraking Missions* ..... 3954
*Amrutha Dasyam, Atri Dutta*

Exhaustive-Serve-Longest Control for Multi-robot Scheduling Systems ..... 3960
*Mohammad Merati, David Castañón*

Tube-based Robust MPC for Variable Air Volume Systems in Airport Terminals ..... 3967
*Liguo Zhang, Kaichao He, Jingyuan Zhan, Rui Shi*

Contract-based hierarchical control using predictive feasibility value functions ..... 3973
*Felix Berkel, Kim Peter Wabersich, Hongxi Xiang, Elias Milios*

Contact-implicit MPC for multimodal locomotion ..... 3979
*Kaushik Venkatesh Krishnamurthy, Adarsh Salagame, Eric Sihite, Alireza Ramezani*

Robust Attitude Control of Nonlinear UAV Dynamics with LFT Models and H∞ Performance ..... 3985
*Tanay Kumar, Raktim Bhattacharya*

Lagrangian-based Disturbance Observer for Uncertain Mechanical Systems: A Case Study of 1 Degree of Freedom ..... 3991
*Hyobin Lee, Gyunghoon Park*

Robust Regret Control with Uncertainty-Dependent Baseline ..... 3999
*Jietian Liu, Peter Seiler*

Robust Multi-Objective Control for DC-DC Converters Under Parametric Uncertainties: Experimental Validation ..... 4005
*Omaima Smouni, Meriem Labourel Nachidi, Abdelhamid Rabhi, Jérôme Bosche, Amine Yazidi*

Resilient Composite Control for Stability Enhancement in EV Integrated DC Microgrids ..... 4011
*Md Saiful Islam, Rahul Bhadani*

Design and Modeling of the Coiled String Actuator with a Constant Twisting and Coiling Zone ..... 4017
*Will Noack, Jun Zhang*

Direct Data-Driven Predictive Control for a Three-Dimensional Cable-Driven Soft Robotic Arm ..... 4023
*Cheng Ouyang, Moeen Ul Islam, Dong Chen, Kaixiang Zhang, Zhaojian Li, Xiaobo Tan*

DiSA-IQL: Offline Reinforcement Learning for Robust Soft Robot Control under Distribution Shifts ..... 4029
*Linjin He, Xinda Qi, Dong Chen, Zhaojian Li, Xiaobo Tan*

Learning to Crawl: Latent Model-Based Reinforcement Learning for Soft Robotic Adaptive Locomotion ..... 4035
*Vaughn Gzenda, Robin Chhabra*

A Physics-informed Geometric Model for Characterizing Force and Length Variation of McKibben Pneumatic Artificial Muscles ..... 4043
*Sabrina Montoya, Mahdi Haghshenas-Jaryani*

Adaptive Admittance Control of Nasal Swab Robots ..... 4050
*Tesheng Hsiao, Yi-Jing Li*

Robust Multi-Parameter & State Estimation in Dissipative Flux Qubit Systems via Sliding Mode Control ..... 4056
*Kaydian Quintero, Bereket Berhane, Sergey V. Drakunov*

Continuous-Time Quantum Reservoirs ..... 4062
*Anthony Siming Chen, Kyriakos G. Vamvoudakis*

Quantum Deception: Honey-X Deception using Quantum Games ..... 4068
*Efstratios Reppas, Ali Wadi, Brendan Gould, Kyriakos G. Vamvoudakis*

Data-Driven Actuator Selection for High-Fidelity Quantum Optimal Control ..... 4074
*Ali Wadi, Kyriakos G. Vamvoudakis*

Adaptive Driving Style for SAE Level-2 Driving Automation: Minimizing Preference Mismatch ..... 4080
*Kumar Akash, Zhaobo Zheng, Teruhisa Misu, Vidya Krishnamoorthy, Mia Dong, Yuni Lee, Gaojian Huang*

LLM-Enhanced Human-in-the-Loop MPC: TCLab Demonstration for Pharma 4.0 ..... 4088
*Jonathan Pershing, Nathan Stone, Joseph Allison, Darren Whitaker, John D. Hedengren*

Energy-Efficient Intent Estimation and Distributed Optimal Control for Human–Multi-Robot Collaboration ..... 4094
*Irfan Ganie, Sarangapani Jagannathan*

Characterization of Modes of Human-Autonomy Team Behavior Using the Distance to Generalized Nash Equilibria in Shared Vehicle Control ..... 4100
*Aleksandra Dudek, Nouhed Naidja, Scott James, Matthew Castanier, Steve Pechberti Mohamed-Cherif Rahal, Chris Vermillion, Kira Barton*

Shared Autonomy under Human Performance Uncertainty via Bayesian Learning and Nested Control Barrier Functions ..... 4106
*Xiao Li, John Talbot, James Dallas, John Subosits*

A 3-State Clock Machine for Combinatorial Optimization ..... 4114
*Yi Cheng, Zongli Lin*

Multiagent Social Influence: Modeling Persuasion in Contested Social Networks ..... 4120
*Renukanandan Tumu, Cristian Ioan Vasile, Victor Preciado, Rahul Mangharam*

Toward Extremal Graphs for Maximum Total Effective Resistance under Vertex and Edge Constraints* ..... 4128
*Susie Lu, Marco Gamarra, Ji Liu*

Distributed Online Submodular Maximization under Communication Delays: A Simultaneous Decision-Making Approach ..... 4133
*Zirui Xu, Vasileios Tzoumas*

Opinion Clustering under the Friedkin-Johnsen Model: Agreement in Disagreement ..... 4139
*Aashi Shrinate, Twinkle Tripathy*

Multi-Agent Stage-wise Conservative Linear Bandits ..... 4145
*Amirhossein Afsharrad, Ahmadreza Moradipari, Sanjay Lall*

Traffic Density Control via Filtered Feedback Linearization in Homogeneous Highway Corridors with Input Constraints ..... 4153
*Arash Rahmanidehkordi, Amirhossein Ghasemi*

Spatiotemporal Forecasting of Incidents and Congestion with Implications for Sustainable Traffic Control ..... 4160
*Tony Kinchen, Ting Bai, Nishanth Venkatesh S., Andreas A. Malikopoulos*

Route Recommendations for Traffic Management Under Learned Partial Driver Compliance ..... 4166
*Heeseung Bang, Jung-Hoon Cho, Cathy Wu, Andreas A. Malikopoulos*

Nonlinear Consensus for Traffic Assignment in Multi-Route Networks ..... 4172
*Emmanuel Adjei, Brooks A. Butler, Wenlong Jin, Magnus Egerstedt*

Discrete-Time Pricing for Nash Stabilization in Routing Games ..... 4178
*Richard Lee, Jeffrey T. Scruggs, Yafeng Yin*

R3R: Decentralized Multi-Agent Collision Avoidance with Infinite-Horizon Safety ..... 4185
*Thomas Marshall Vielmetti, Devansh R. Agrawal, Dimitra Panagou*

Stability Analysis of Vehicle Platooning with PID Control via Dominant Pole Placement ..... 4193
*Isha Choudhary, Shilp Dixit, Kaushik Halder*

A Lyapunov-based Formation Control Framework for Multi-Agent Systems in Space-Restricted and Obstacle-Populated Environments ..... 4200
*Teo Protoulis, Alex Alexandridis*

Target Tracking with Field-of-View Constraints using Sentry-Type Robots with Limited Observations ..... 4206
*Richard T. O'Brien, Jeremy J. Dawkins, Kevin S. Galloway, Michael D. M. Kutzer*

Combining Cooperative Re-Routing with Intersection Coordination for Connected and Automated Vehicles in Urban Networks ..... 4212
*Panagiotis Typaldos, Andreas A. Malikopoulos*

A Coordinated Routing Approach for Enhancing Bus Timeliness and Travel Efficiency in Mixed-Traffic Environment ..... 4218
*Tanlu Liang, Ting Bai, Andreas A. Malikopoulos*

Control Affine Hybrid Power Plant Subsystem Modeling for Supervisory Control Design ..... 4224
*Stephen Ampleman, Himanshu Sharma, Sayak Mukherjee, Sonja Glavaski*

Control Co-Design for Maximizing the Stochastic Endurance of a Hybrid Electric Tiltrotor Drone ..... 4230
*Noushin Haddad, Hosam K. Fathy*

Small HVAC Control Demonstrations in Larger Buildings Often Overestimate Savings ..... 4236
*Arash J. Khabbazi, Kevin J. Kircher*

Risk-Sensitive Model Predictive Control for Grid Services Through Distributed Energy Resources: A Conditional Value-at-Risk Approach ..... 4242
*Ahmed Khalil, Himanshu Sharma, Wei Wang, Thiagarajan Ramachandran*

Coordinated Control of Active and Passive Elements for Energy-efficient Building Temperature Regulation ..... 4248
*Fardin Ishtiaq, Alexandra Rempel, Koushik Kar, Sandipan Mishra*

A Distributed Machine Learning Approach for Cyberattack Detection in Integrated Process Systems ..... 4256
*Amirsalar Bagheri, Amirmohammad Ebrahimi, Davood B. Pourkargar*

Discovering interpretable piecewise nonlinear model predictive control laws via symbolic decision trees* ..... 4263
*Ilias Mitrai*

Approximate Dynamic Optimization via Deep Neural Operators ..... 4269
*Amin Nassaji, Ilias Mitrai, Prodromos Daoutidis*

Cooling Under Convexity: An Inventory Control Perspective on Industrial Refrigeration ..... 4275
*Vade Shah, Yohan John, Ethan Freifeld, Lily Y. Chen, Jason R. Marden*

Real-Time Classification of Industrial Alarm Floods Using Context-Enriched Embeddings* ..... 4281
*Harikrishna Rao Mohan Rao, Nicola Tamascelli, Tongwen Chen*

Multi-Agent Reinforcement Learning based Adaptive PI Controller for Multivariable Process Control Applications ..... 4287
*Sourabh Yadav, Ketan P. Detroja*

Shared Object Manipulation with a Team of Collaborative Quadrupeds ..... 4293
*Shengzhi Wang, Niels Dehio, Xuanqi Zeng, Xian Yang, Lingwei Zhang, Yun-Hui Liu, K. W. Samuel Au*

Safe Obstacle-Free Guidance of Space Manipulators in Debris Removal Missions via Deep Reinforcement Learning ..... 4301
*Vincent Lam, Robin Chhabra*

Torques-to-Pixels: Verification of Visual Controllers ..... 4309
*Alexander Estornell, Leonard Jung, Michael Everett*

Gaussian Mixture-Based Inverse Perception Contract for Uncertainty-Aware Robot Navigation ..... 4317
*Bingyao Du, Joonkyung Kim, Yiwei Lyu*

A Simulation Evaluation Suite for Robust Adaptive Quadcopter Control ..... 4325
*Dingqi Zhang, Ran Tao, Sheng Cheng, Naira Hovakimyan, Mark W. Mueller*

Learning Linear Temporal Specifications from Demonstrations with Uncertainty ..... 4333
*Parastou Fahim, Constantino Lagoa, Rômulo Meira-Góes*

Motion Planning Under Temporal Logic Specifications In Semantically Unknown Environments ..... 4340
*Azizollah Taheri, Derya Aksaray*

Temporal-Logic-Aware Frontier-Based Exploration ..... 4346
*Azizollah Taheri, Derya Aksaray*

Safety-Critical Control via Recurrent Tracking Functions ..... 4352
*Jixian Liu, Enrique Mallada*

Safe and Optimal Learning from Preferences via Weighted Temporal Logic with Applications in Robotics and Formula 1 ..... 4359
*Ruya Karagulle, Cristian-Ioan Vasile, Necmiye Ozay*

Shielded Reinforcement Learning Under Dynamic Temporal Logic Constraints ..... 4367
*Sadık Bera Yüksel, Ali Tevfik Buyukkocak, Derya Aksaray*

Resilient Leader-Following Consensus Control Using Set-Membership Fuzzy Filtering ..... 4373
*Mahshid Rahimifard, Rastko R. Selmic*

Distributed Prescribed-Time Formation Control with Multiple Multi-Agent Systems for Smart Transportation Applications ..... 4381
*Alp Merzi, Luigi D'Alfonso, Giuseppe Fedele*

Temporal Graph-Theoretic Stability Analysis of Time-Varying Opinion Dynamics ..... 4387
*M. Hossein Abedinzadeh, Emrah Akyol*

Leader-Follower Consensus of Linear Multi-Agent Systems with Intermittent Communication and Disturbances via Observer-Based Control ..... 4393
*Fatemeh Zarei, Amirahmad Saeidi, Bahram Shafai*

Privacy-Preserving Dynamic Average Consensus by Masking Reference Signals ..... 4399
*Mihitha Maithripala, Zongli Lin*

Communication Efficient Consensus via Lower-Dimensional Data ..... 4405
*Ayush Rai, Shaoshuai Mou*

Uniting Reinforcement Learning and Model Predictive Control in Feedback Control of Nonlinear Processes ..... 4411
*Xiaodong Cui, Arthur Khodaverdian, Panagiotis D. Christofides*

Learning Robust Regions of Attraction Using Rollout-Enhanced Physics-Informed Neural Networks with Policy Iteration ..... 4419
*Junkai Wang, Yuxuan Zhao, Mi Zhou, Fumin Zhang*

LEAP-O: Learning to Predict Dynamic Obstacles for Safe Trajectory Planning ..... 4425
*Binh Nguyen, Truong X. Nghiem, Linh Nguyen, Hung M. La, Thang Nguyen*

Plug-and-Play Design of Machine Learning-Based Model Predictive Controllers for Nonlinear Systems ..... 4431
*Yuxiao Ji, Yao Shi, Zhe Wu*

PIML-RHC as a Control Method: A Physics-Informed Transformer Policy for Real-Time Eco-Driving ..... 4438
*Arnon Bruno Ventrilho Dos Santos, Marco Antonio Zanata Alves, Luiz Eduardo Soares de Oliveira*

Reinforcement Learning-Based Path Planning and Obstacle Avoidance Using PPO and B-Splines in Unknown Environments ..... 4444
*Shahab Shokouhi, May-Win Thein, Oguzhan Oruc*

Accumulating Magnetic Nanorods in a Stable Magnetic Trap by Exploiting Their Rotational Dynamics ..... 4450
*Denae Cantrell, Arash Komaee*

Robust Data-Driven Invariant Sets for Nonlinear Systems ..... 4456
*Sahand Kiani, Constantino M. Lagoa*

Analysis of the Geometric Heat Flow Equation: Computing Geodesics in Real-Time with Convergence Guarantees ..... 4462
*Samuel G. Gessow, Brett T. Lopez*

A Numerical Investigation of the Domain of Attraction of the Kapitza Pendulum Using Harmonic and Nonharmonic Base Excitation ..... 4469
*Syed Aseem Ul Islam, Omran Kouba, Jhon Manuel Portella Delgado, Dennis S. Bernstein*

MM-LMPC: Multi-Modal Learning Model Predictive Control via Bandit-Based Mode Selection ..... 4475
*Wataru Hashimoto, Kazumune Hashimoto*

Event-Triggered Learning Robust MPC for Unknown Time-Varying ARX Systems Using Input-Output Data ..... 4483
*Li Deng, Zhan Shu, Tongwen Chen*

A simple structure model-free ILC scheme for nonlinear batch processes designed within a repetitive process setting ..... 4489
*Wojciech Paszke, Shoulin Hao, Tao Liu, Hongfeng Tao, Eric Rogers*

Koopman-Based Sliding Mode Control for Data-Driven Stabilization of Nonlinear Systems ..... 4495
*Moussa Labbadi, Zhengang Zhong*

A Repetitive Learning Model Predictive Control Method for Nonlinear Systems with Application to Roll-to-Roll Manufacturing ..... 4501
*C. Martin, S. Li, J. Li, W. Li, D. Chen*

Multi-Model Covariance Steering for Continuous-Time Stochastic Linear Systems ..... 4507
*Efstathios Bakolas*

Fine-tuning diffusion models via stochastic control: entropy regularization and beyond ..... 4513
*Wenpin Tang, Fuzhong Zhou*

Belief-Based Reinforcement Learning for Asymmetric Partially Observable Zero-Sum Games ..... 4521
*Seyed Hamid Hosseini, Armita Kazeminajafabadi, Amidu Kamara, Mahdi Imani*

Probabilistic Modeling of CGM-Derived Daily Minimum Glucose in Type 2 Diabetes: Hierarchical vs. Non-Hierarchical Bayesian Approaches* ..... 4529
*Mohammadreza Ganji, Anas El Fathi, Chiara Fabris*

MPCM-Taguchi for Decision-Making in Uncertain Systems with Application to DC Microgrids ..... 4535
*Siyu Zhou, Yan Wan, Ahmet Taha Koru*

Discrete-time linear quadratic stochastic control with equality-constrained inputs: Application to energy demand response ..... 4541
*Léo Seugnet, Shuang Gao*

Control Structure Screening for Robust Isolation of Controller-Actuator False Data Injection Attacks ..... 4548
*Aatam Gajjar, Nael H. El-Farra, Matthew J. Ellis*

Failure-Tolerant Data-Driven Control for Discrete-Time Linear Systems ..... 4554
*Shuaizheng Lu, Jiaping Liao, Zihao Mo, Weiming Xiang*

Closing the Loop Inside Neural Networks: Causality-Guided Layer Adaptation for Fault Recovery Control ..... 4560
*Mahdi Taheri, Soon-Jo Chung, Fred Y. Hadaegh*

Fault Tolerant Torque/Speed Control of a Doubly-Fed Induction Machine ..... 4566
*Md Abid Hossain, Marc Bodson*

Fault-Tolerant Adaptive Switching Control of Deformable Mirrors under Actuator Failures and Saturation Limits ..... 4574
*Binyan Xu, Khaled Aljanaideh, Matthias Goy, Mohammad Al Janaideh*

Partial Attention in Deep Reinforcement Learning for Safe Multi-Agent Control ..... 4581
*Turki Bin Mohaya, Peter Seiler*

Event-Based Control via Sparsity-Promoting Regularization: A Rollout Approach with Performance Guarantees ..... 4587
*Shumpei Nishida, Kunihisa Okano*

Planning Stealthy Backdoor Attacks in MDPs with Observation-Based Triggers ..... 4593
*Xinyi Wei, Shuo Han, Ahmed Hemida, Charles A Kamhoua, Jie Fu*

Safe Output Feedback Approximate Dynamic Programming for Nonlinear Control Affine Systems ..... 4600
*S M Nahid Mahmud, Ayush Rai, Shaoshuai Mou*

Optimizing Task Completion Time Updates Using POMDPs ..... 4606
*Duncan Eddy, Esen Yel, Emma Passmore, Niles Egan, Grayson Armour, Dylan M. Asmar Mykel J. Kochenderfer*

Complex-Valued Optimal Control for Three-Phase Voltage Source Converter Model using Policy Iteration ..... 4613
*Manoj Nagappan, Sathishkumar Murugesan, Quang Huy Tran, Yen-Chen Liu*

A Model Predictive Control Approach to Optimal Point Tracking of Unknown Trajectories for Human Binocular Eye Rotation ..... 4619
*Akkshansh Bagga, Mikaela Finlay, Liza Platonov, Benjamin Tobin, Bijoy Ghosh, Bhagya Athukorallage*

Sample-Efficient and Smooth Cross-Entropy Method Model Predictive Control Using Deterministic Samples ..... 4626
*Markus Walker, Daniel Frisch, Uwe D. Hanebeck*

Ensemble Kalman Inversion for Constrained Nonlinear MPC: An ADMM-Splitting Approach ..... 4634
*Ahmed Khalil, Mohamed Safwat, Efstathios Bakolas*

Personalized MPC for Autonomous Vehicle Lateral Motion Control via Inverse Reinforcement Learning ..... 4640
*Zhaodong Zhou, Mingyuan Tao, Jiayi Qiu, Peng Zhang, Meng Xu, Yong Sun, Jun Chen*

Model Predictive Control with High-Probability Safety Guarantee for Nonlinear Stochastic Systems ..... 4646
*Zishun Liu, Liqian Ma, Yongxin Chen*

The Elastic Model Predictive Safety Filter ..... 4652
*Alberto Auricchio, Kaiqiang Zhang, Arthur Richards*

Feedforward and Sliding Mode Control of a Novel Precision 2-DoF Reluctance Motion System ..... 4658
*Michael Pumphrey, Mohammad Al Saaideh, Binyan Xu, Natheer Alatawneh, Mohammad Al Janaideh*

Stability and Stabilization of Switched Systems with Random Intermittent Information Transmission ..... 4664
*Fatima Taousser, Yichao Wang, Seddik Djouadi, Kevin Tomsovic*

Follow-the-Ridge Approach Based Sliding-Mode Control for Local Minimax Optimisation ..... 4670
*Abdelhafid Zenati, Nabil Aouf*

Sliding Mode Control with Disjoint Switching Manifolds and Distributed Digital Twin for a Steam Tracing System ..... 4676
*Joseph Jay V. D'Amico, Siddarth Chintalapati, Kyle Fox, Ryan Kinzie, Scarlett O'Brien Alif Muhammad Shafiyee, Sergey V. Drakunov*

Necessary and Sufficient Conditions for Consensus of Binary Input Consensus Protocol ..... 4683
*Mingxi Li, Dongyu Li, Hanzhou Wang*

Liquid Neural Network-Based Integral Sliding Mode Control of Multirotor UAV under Model Uncertainty and Disturbance ..... 4689
*Zainab Akhtar, Salman Ijaz, Qadeer Ahmed, Sidra Ghayour Bhatti*

Deterministic Learning-based Spatiotemporal Dynamics Identification and Estimation of Nonlinear Uncertain Parabolic PDE Systems ..... 4695
*Jingting Zhang, Hong Cheng*

Distributed Koopman Learning using Partial Trajectories for Control ..... 4702
*Wenjian Hao, Zehui Lu, Devesh Upadhyay, Shaoshuai Mou*

Parameterization of Seed Functions for Equivalent Representations of Time-Varying Delay Systems ..... 4708
*Sengiyumva Kisole, Jungbae Chun, Peter Seiler, Matthew M. Peet*

Data-driven Operator Policy Iteration with an Application to 1-d Wave Equations ..... 4714
*Zhun Yin, Zhong-Ping Jiang*

A System Level Approach to LQR Control of the Diffusion Equation ..... 4720
*Addie McCurdy, Andrew Gusty, Emily Jensen*