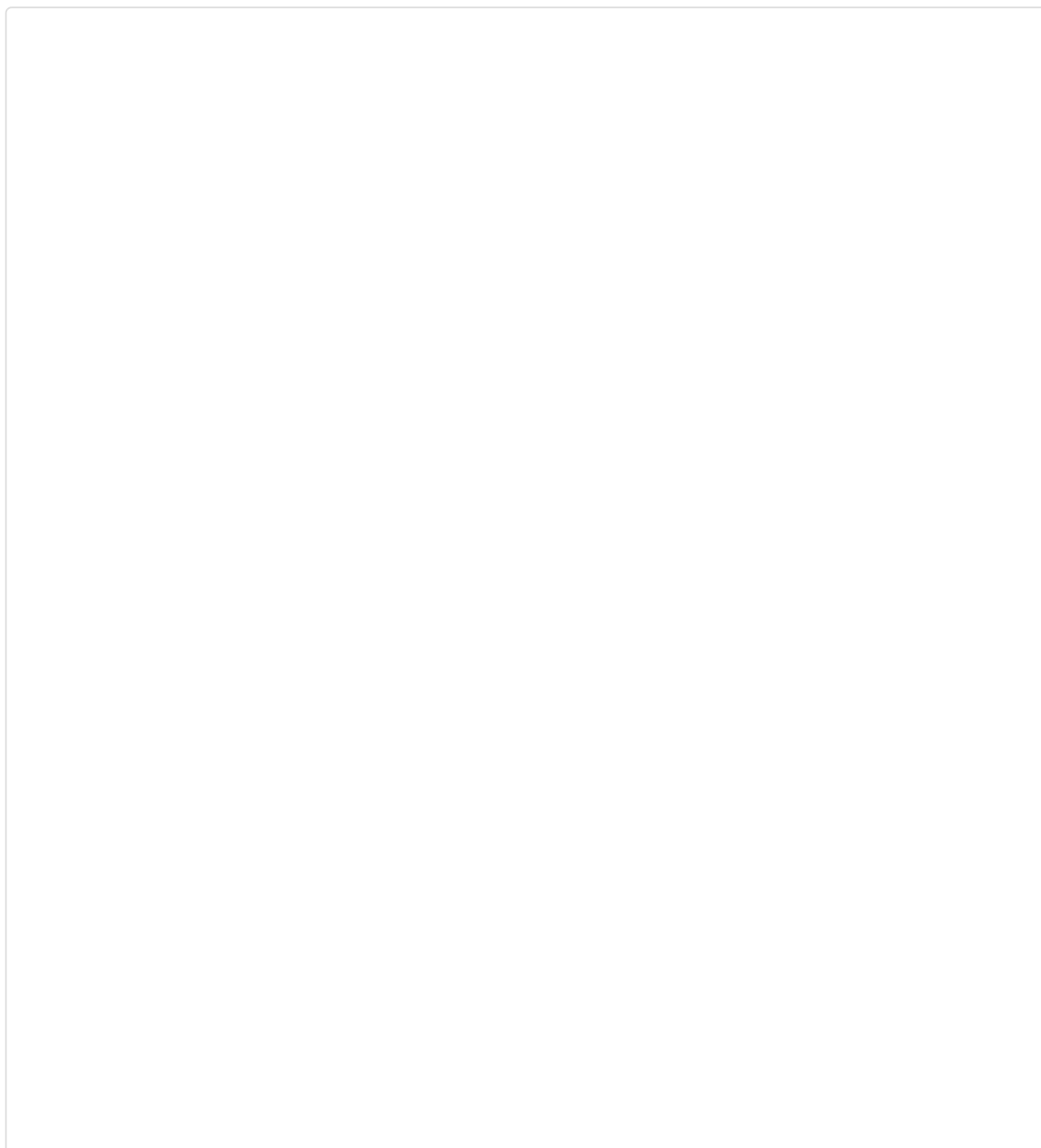


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Publications:

Books and Book Chapters:

- [1] **رضا محبوبي اسفاریجانی**, " تجزیه و تحلیل سیستم ها: شرح درسی، مثال های حل شده، نکات کلیدی، تست های طبقه بندی شده"، انتشارات بلوی، فرهنگته، تهران، 1387 (چاپ هشتم 1392)
[2] H. Rezaei, S. Mohamed, **R. Mahboobi Esfarijani**, S. Nahavandi, "Improved Robust Kalman Filtering for Uncertain Systems with Missing Measurements", Lecture Notes in Computer Science, Neural Information Processing, (Editors: C.K. Loo et al.) pp. 509-518, Springer International Publishing, 2014.

Journal Papers:

- [1] **R. Mahboobi Esfarijani**, S. K. Y. Nikravesh, "Stabilising Predictive Control of Nonlinear Time-Delay Systems Using Control Lyapunov-Krasovskii Functionals", IET Control Theory and Applications, Vol. 3(10), pp. 1395-1400, 2009.
[2] **R. Mahboobi Esfarijani**, S. K. Y. Nikravesh, "Predictive Control for a Class of Distributed Delay Systems Using Chebyshev Polynomials", International Journal of Computer Mathematics, Vol. 87(10), pp. 1591-1601, 2010.
[3] **R. Mahboobi Esfarijani**, S. K. Y. Nikravesh, "Stabilizing Model Predictive Control of Constrained Nonlinear Distributed Delay systems", ISA Transactions, Vol. 50, pp. 201-206, 2011.
[4] M. Reble, **R. Mahboobi Esfarijani**, S. K. Y. Nikravesh, F. Allgower, "Model Predictive Control for Constrained Nonlinear Time Delay Systems", IMA Journal of Mathematical Control and Information, Vol 28(2), pp. 183-201, 2011.
[5] H. Rezaei, **R. Mahboobi Esfarijani**, M. H. Sedaaghi, "Improved Kalman Filtering for Systems with Randomly Delayed and Lost Measurements", Circuits, Systems and Signal Processing, Vol. 33, pp. 2217-2236, 2014.
[6] M. Mahmoodi Kaleybar, **R. Mahboobi Esfarijani**, "Stabilization of Networked Control Systems with Variable Delays and Saturating Inputs", Iranian Journal of Electrical & Electronic Engineering, Vol. 10, pp. 96-104, 2014.
[7] A. Farnam, **R. Mahboobi Esfarijani**, "Improved Stabilization Method for Networked Systems with Variable Transmission Delays and Packet Dropout", ISA Transactions, Vol. 53, pp. 1746-1753, 2014.
[8] H. Rezaei, **R. Mahboobi Esfarijani**, M. H. Sedaaghi, "Improved Robust Finite-Horizon Kalman Filtering for Uncertain Networked Time-Varying Systems", Information Sciences, Vol. 93, pp. 263-274, 2015.
[9] H. Rezaei, **R. Mahboobi Esfarijani**, M. Farsi, "Robust Filtering for Uncertain Networked Systems with Randomly Delayed and Lost Measurements", IET Signal Processing, Vol. 9(4), pp. 320-327, 2015.
[10] A. Farnam, **R. Mahboobi Esfarijani**, M. Farsi, "A Less Conservative Criterion for Stability Analysis of Linear Systems with Time-Varying Delay", Scientia Iranica, Vol. 22(6), pp. 2415-2423, 2015.
[11] A. Farnam, **R. Mahboobi Esfarijani**, "Improved Linear Matrix Inequality Approach to Stability Analysis of Linear Systems with Interval Time-varying Delays", Journal of Computational and Applied Mathematics, Vol. 294, pp. 49-56, 2016.
[12] S. Marouf, **R. Mahboobi Esfarijani**, A. Akbari, M. Barforooshan, "T-S Fuzzy Controller Design for Stabilization of Nonlinear Networked Control Systems", Engineering Applications of Artificial Intelligence, Vol. 50, pp. 135-141, 2016.
[13] A. Noori, M. Farsi, **R. Mahboobi Esfarijani**, "Design and Implementation of a Robust Switching Strategy for DC-DC Converters", IET Power Electronics, Vol. 9, pp. 316-322, 2016.
[14] M. Barforooshan, **R. Mahboobi Esfarijani**, "Output Feedback Stabilization Over Finite-bandwidth Communication Channels with Signal-to-noise Ratio Constraint", IMA Journal of Mathematical Control and Information, Vol. 33, pp. 831-842, 2016.
[15] M. Barforooshan, **R. Mahboobi Esfarijani**, "Stabilization over Frequency-Selective Channels Subject to Transmission Delay and Signal-to-Noise Ratio Limitations", Complexity, Vol. 21, pp. 557-565, 2016.
[16] M. Farsi, **R. Mahboobi Esfarijani**, "Improved Over-approximation Method for Modeling and Stability Analysis of Networked Control Systems", Transactions of the Institute of Measurement and Control, Vol. 39, pp. 131-140, 2017.
[17] M. Hossainzade Yamchi, **R. Mahboobi Esfarijani**, "Distributed Predictive Formation Control of Networked Mobile Robots Subject to Communication Delay", Robotics and Autonomous Systems, Vol. 91, pp. 194-207, 2017.
[18] M. Hossainzade Yamchi, **R. Mahboobi Esfarijani**, "Formation Control of Networked Mobile Robots with Guaranteed Obstacle and Collision Avoidance", Robotics, Vol. 35, pp. 1365-1377, 2017.
[19] اگرم نیک فراتر، **رضا محبوبي اسفاریجانی**، مینم معتمدی "دانش و فناوری هوشمند"، دوم، شماره 2، 1396.
[20] M. Hossainzade Yamchi, **R. Mahboobi Esfarijani**, "A Decentralized Receding Horizon Optimal Approach to Formation Control of Networked Mobile Robots", Optimal Control Applications and Methods, Vol. 39, pp. 51-64, 2018.
[21] A. Nikfetrat, **R. Mahboobi Esfarijani**, "Adaptive Kalman Filtering for Systems Subject to Randomly Delayed and Lost Measurements", Circuits, Systems and Signal Processing, Vol. 37, pp. 2433-2449, 2018.
[22] R. Esmzad, **R. Mahboobi Esfarijani**, "Modified likelihood probabilistic data association filter for tracking systems with delayed and lost measurements", Digital Signal Processing, Vol. 76, pp. 66-74, 2018.
[23] A. Farnam, **R. Mahboobi Esfarijani**, "Design of Observer-based Hoo Controller for Robust Stabilization of Networked Systems Using Switched Lyapunov Functions", AIJ-Modelling, Identification, Simulation & Control, 2018.
[24] حسین صفایه هیری، محمد هجری "کنترل بیش بین مدل های چند سطحی چندبخشی با بهره گیری از الگوریتم بهینه سازی رمزگشایی گرو"، نشریه مهندسی برق و مهندسی کامپیوتر ایران، شماره 1 (16) صفحات 28-21، 1397.
[25] R. Esmzad, **R. Mahboobi Esfarijani**, "Modified likelihood Kalman filter for systems with incomplete, delayed and lost measurements", Systems and Control Letters, Vol. 120, pp. 23-28, 2018.

- [26] H. Seyed Alinzhad, M. Hossainzade Yamchi, **R. Mahboobi Esfarijani**, "Robust synchronization of networked manipulators using distributed dynamic Hoo controllers", ISA Transactions, Vol. 83, pp. 239-247, 2018.
[27] A. Nikfetrat, **R. Mahboobi Esfarijani**, "Self-tuning Kalman filter for compensation of transmission delay and loss in line-of-sight guidance", Proceedings of the Institution of Mechanical Engineers, Part G: Journal of Aerospace Engineering, Vol. 233, pp. 4191-4201, 2019.
[28] R. Esmzad, **R. Mahboobi Esfarijani**, "Bayesian filter for nonlinear systems with randomly delayed and lost measurements", Automatica, Vol. 107, pp. 36-42, 2019.
[29] S. Rahmampour, **R. Mahboobi Esfarijani**, "Energy-aware planning of motion and communication strategies for networked mobile robots", Information Sciences, Vol. 497, pp. 149-164, 2019.
[30] S. Rahmampour, **R. Mahboobi Esfarijani**, "Decentralized Energy-Aware Co-Planning of Motion and Communication Strategies for Networked Mobile Robots", IEEE Transactions on Cognitive and Developmental Systems, Vol. 12, pp. 519-528, 2020.
[31] R. Ebrahimi Bavili, A. Akbari, **R. Mahboobi Esfarijani**, "Passivity-based control of nonlinear teleoperation systems with non-passive interaction forces", Intelligent Service Robotics, Vol. 50, pp. 419-437, 2020.
[32] H. Rezaei, **R. Mahboobi Esfarijani**, A. Akbari, M.H. Sedaaghi, "Event-triggered distributed Kalman filter with consensus on estimation for state-saturated systems", International Journal of Robust and Nonlinear Control, Vol. 30, pp. 8327-8339, 2020.
[33] R. Ebrahimi Bavili, A. Akbari, **R. Mahboobi Esfarijani**, "Nonlinear Control of Bilateral Teleoperators Interacting Non-passive Termination Forces", AUT Journal of Mechanical Engineering, Vol. 4, 3, pp. 7-7, 2020.
[34] باب ابراهیمی باولی، احمد اکبری، **رضا محبوبي اسفاریجانی**، "سیستم عمل از دور دوطرفه در حضور نیروهای نامساوی غیرمقطوع و عبب عملکردها"، مجله کنترل، شماره 4 صفحات 54-43، 1399.
[35] R. Ebrahimi Bavili, A. Akbari, **R. Mahboobi Esfarijani**, "Controller design for nonlinear bilateral teleoperation systems via total energy shaping", Mechanical Systems and Signal Processing, Vol. 150, 107239, 2021.
[36] H. Rezaei, **R. Mahboobi Esfarijani**, A. Akbari, M.H. Sedaaghi, "Scalable event-triggered distributed extended Kalman filter for nonlinear systems subject to randomly delayed and lost measurements", Digital Signal Processing, Vol. 111, 102957, 2021.
[37] باب ابراهیمی باولی، احمد اکبری، **رضا محبوبي اسفاریجانی**، "طراحی کنترل کننده مقاوم برای سیستم عمل از دور غیرخطی با روش انفعال محور"، مهندسی مکانیک دانشگاه عزیزشماره 95 صفحات 10-1، 1400.
[38] R. Ebrahimi Bavili, A. Akbari, **R. Mahboobi Esfarijani**, "Control of Teleoperation Systems in the Presence of Varying Transmission Delay, Non-passive Interaction Forces, and Model Uncertainty", Robotics, Vol. 39 (8), 1451-1467, 2021.
[39] A. Najadvali, **R. Mahboobi Esfarijani**, A. Farnam, G. Crevecoeur, "Delay dependent criteria for the consensus of second-order multi-agent systems subject to communication delay", IET Control Theory and Applications, Vol. 15(13), 1697-1788, 2021.
[40] H. S. Alinzhad, **R. Mahboobi Esfarijani**, "Nonlinear Hoo control for synchronization of networked manipulators subject to delayed communication" Journal of the Franklin Institute, Vol. 359 (2), pp. 999-1017, 2022.
[41] B. Gharib, **R. Mahboobi Esfarijani**, "Distributed Control of Multi-Robot Systems with Communication Delay for Cooperative Source Seeking", Journal of Control (English Edition), Vol. 1 (1), pp. 85-97, 2022.
[42] F. Rahimi, **R. Mahboobi Esfarijani**, "Estimating tolerable communication delays for distributed optimization problems in control of heterogeneous multi-agent systems", IET Control Theory & Applications, Vol. 18(5), pp. 626-639, 2024.
[43] T. Hashemi, **R. Mahboobi Esfarijani**, H. Jafari Kaleybar, "Composite Switched Lyapunov Function-Based Control of DC-DC Converters for Renewable Energy Applications", Electronics, 13(1), 84, 2024.
[44] A. Ahmadi, **R. Mahboobi Esfarijani**, "Automatic tuning of PID controllers using deep recurrent neural networks with pruning based on tracking error", Journal of Instrumentation, 19, 1-15, 2024.
[45] B. Gharib, **R. Mahboobi Esfarijani**, "Control of networked robots subject to communication delay and switching connection topology for cooperative source-seeking with collision avoidance" Transactions of the Institute of Measurement and Control, 2024.

Presentations:

- [1] **R. Mahboobi Esfarijani**, M. Reble, S. K. Y. Nikravesh, F. Allgower, "Model Predictive Control of Constrained Nonlinear Time-Delay Systems", 48th IEEE Conference on Decision and Control (CDC), Shanghai, China, 2009.
[2] **R. Mahboobi Esfarijani**, F. Towhidkhah, "Application of Nonlinear Model Predictive Controller for FES Assisted Standing Up in Paraplegia", 27th Annual International Conference of the IEEE-EMBS, Shanghai, China, 2005.
[3] **R. Mahboobi Esfarijani**, M. B. Menhaj, "Robust Locomotion of biped Robot Using Nonlinear H_∞ Tracking Controller", International Conference on Automation, Control and Instrumentation, Valencia, Spain, 2006.
[4] **R. Mahboobi Esfarijani**, S. K. Y. Nikravesh, "Robust Model Predictive Control for Constrained Linear Time-Delay Systems", 22nd International Symposium on Information, Communication and Automation Technologie (ICAT), Sarajevo, 2009.
[5] A. Sedighi, **R. Mahboobi Esfarijani**, "State Observer in Networked Control Systems with Variable Delay in the Feedback Channel", 17th International Conference on Automation and Computing, Huddersfield, UK, 2011.
[6] M. Mahmoodi Kaleybar, **R. Mahboobi Esfarijani**, "Stabilization of Networked Control Systems with Variable Transmission Delays", 17th International Conference on Automation and Computing, Huddersfield, UK, 2011.
[7] A. Sedighi, **R. Mahboobi Esfarijani**, "State Observer Design for Networked Control Systems with Variable Delay in the Feedback and Forward Channels", 2nd International Conference on Control, Instrumentation and Automation, Shiraz, Iran, 2011.
[8] هادی صمدی، **رضا محبوبي اسفاریجانی**، "یادداشتی در خصوص تأخیرهای نامساوی"، یادداشتی کنفرانس سیستمهای خودمختار ایران، تهران، 1391
[9] A. Farnam, **R. Mahboobi Esfarijani**, "Improvement of Robust H_∞ Controller Design for Networked Control Systems", National Congress on Electrical Computer and Information Technology Engineering, Mashhad, Iran, 2012.
[10] A. Farnam, M. Mahmoodi Kaleybar, **R. Mahboobi Esfarijani**, "Networked Control of Wheeled Mobile Robots", RSI/ISM International Conference on Robotics and Mechatronics, Tehran, Iran, 2013.
[11] T. Hashemi, A. Farnam, **R. Mahboobi Esfarijani**, H. Madadi Kojabadi, "A New Approach to Design Switching Strategy for the Buck Converters", 4th Annual International Power Electronics, Drive Systems and Technologies Conference (PEDSTC), Tehran, Iran, 2013.
[12] A. Farnam, **R. Mahboobi Esfarijani**, "Networked Based Hoo Stabilization of Uncertain Systems", 21st Iranian Conference on Electrical Engineering (ICEE), Mashhad, Iran, 2013.
[13] M. Valedin Asl, **R. Mahboobi Esfarijani**, "Stabilization of Networked Control Systems Using Switched Time-delay Systems Theory", 3rd International Conference on Control, Instrumentation and Automation, Tehran, Iran, 2013.
[14] M. Farsi, A. Farnam, **R. Mahboobi Esfarijani**, "An Improved Hoo Approach for Networked Control Systems with Transmission Delays and Packet Dropout", 22nd Iranian Conference on Electrical Engineering (ICEE), Tehran, Iran, 2014.
[15] A. Mohamadzadeh, S. Ghaemi, **R. Mahboobi Esfarijani**, "Improved Adaptive Type-2 Fuzzy Control for High Dimensional Nonlinear Systems", 14th Iranian Conference on Fuzzy Systems, Tabriz, Iran, 2014.
[16] M. Valedin Asl, **R. Mahboobi Esfarijani**, "Networked Control of Mobile Robots Using Switched Systems Theory", 2nd International Conference on Robotics and Mechatronics, Tehran, Iran, 2014.
[17] M-R. Khabbazi, **R. Mahboobi Esfarijani**, "Constrained Two-stage Kalman Filter for Target Tracking", 4th International Conference on Computer and Knowledge Engineering, Mashhad, Iran, 2014.
[18] A. Noori, M. Farsi, **R. Mahboobi Esfarijani**, "Robust Switching Strategy for Buck-Boost Converters", 4th International Conference on Computer and Knowledge Engineering, Mashhad, Iran, 2014.
[19] M-R. Zamani Behbahani, **R. Mahboobi Esfarijani** and M. Hejri, "Design of Switching Rule for Buck Converters Using Explicit Predictive Control", 6th Annual International Power Electronics, Drive Systems and Technologies Conference (PEDSTC), Tehran, Iran, 2015.
[20] M-R. Khabbazi, **R. Mahboobi Esfarijani**, "Robust Two-stage Kalman Filtering with State Constraints", 23rd Iranian Conference on Electrical Engineering, Tehran, Iran, 2015.
[21] A. Farnam, **R. Mahboobi Esfarijani**, A. Ahmadi, "Delay Dependent Criterion for Exponential Stability Analysis of Neural Networks with Time-Varying Delays", 13th IFAC Workshop on Time Delay Systems TDS 2016, Istanbul, Turkey, 2016.
[22] H. Seyed Alinzhad, **R. Mahboobi Esfarijani**, "Synchronization of Interconnected Robots Using Distributed Hoo Controllers", 5th International Conference on Robotics and Mechatronics, Tehran, Iran, 2017.
[23] فرارز (ICCIA 2017)، "تألیف نویزهای نوسانی، **رضا محبوبي اسفاریجانی**، "تألیف مقاوم کنترل کننده پیش‌بینی قسمت برای سیستمهای تأخیردار"، پنجمین کنفرانس بین المللی کنترل ابزار دقیق و اتوماسیون شیراز، 1396. [24] محید ریش سفید، آئین نورافشاری، **رضا محبوبي اسفاریجانی**، "جبران اثر نویز حرکت دورانی ماشین کنترل کننده کنونی در موتور"، پنجمین کنفرانس بین المللی کنترل ابزار دقیق و اتوماسیون شیراز، 1396. [25] F. Asadi Tirfashi, **R. Mahboobi Esfarijani**, "Design of Event Generator and Controller for Event-triggered Control of Time Delay Systems", 26th Iranian Conference on Electrical Engineering (ICEE), Mashhad, Iran, 2018.
[26] F. Rahimi, **R. Mahboobi Esfarijani**, "Distributed Predictive Control for Formation of Networked Mobile Robots", 6d International Conference on Robotics and Mechatronics (ICROM), Tehran, Iran, 2018.
[27] S. Rahmampour, **R. Mahboobi Esfarijani**, "Planning of Communication and Motion Strategies for Networked Mobile Robots", 9th Joint Conference on Artificial Intelligence and Robotics and 2nd RoboCup Asia-Pacific International Symposium, Kish Island, Iran, 2018.
[28] F. Rahimi, **R. Mahboobi Esfarijani**, "A Distributed Dual Decomposition Optimization Approach for Coordination of Networked Mobile Robots with Communication Delay", 9th RSI International Conference on Robotics and Mechatronics (ICRoM), Tehran, Iran, 2021.
[29] F. Rahimi, S. Ziaei, **R. Mahboobi Esfarijani**, "A reinforcement learning-based control approach for tracking problem of a class of nonlinear systems: applied to a single-link manipulator", 31st International Conference on Electrical Engineering (ICEE), Tehran, Iran, 2023.
[30] S. Taghizadeh, **R. Mahboobi Esfarijani**, "Estimation of time-varying and state dependent fault using adaptive observer for a class of discrete-time systems", 9th International Conference on Control, Instrumentation and Automation (ICCIA 2023), Tehran, Iran, 2023.
[31] S. Khalilpoor Shadbad, **R. Mahboobi Esfarijani**, "Hybrid Spacing Policy for Adaptive Cruise Control in Smart Cars", 9th International Conference on Control, Instrumentation and Automation (ICCIA 2023), Tehran, Iran, 2023.