Esmaeel Khanmirza

Associate Professor,
Director of Intelligent, Autonomous and
Distributed Systems (IDAS) Lab,
School of Mechanical engineering, Iran
University of Science and Technology

Education

2012	**PhD**, *School of Mechanical Engineering, College of Engineering, University of Tehran*, Tehran, *Cumulative GPA: 18.2/20*
Title	*Integrated Control Synthesis of Hybrid Dynamical Systems*
Supervisor	Dr. A. Yousefi-Koma
Description	The thesis outcome was developing the new method to control hybrid dynamical systems which contain both continuous and discrete dynamics.

2006	**M.Sc**, *School of Mechanical Engineering, College of Engineering, University of Tehran*, Tehran, *Cumulative GPA: 19.2/20*
Title	*Nonlinear Trajectory Control of Micro Aerial Vehicles*
Supervisor	Dr. A. Yousefi-Koma
Description	The thesis was focused on developing the nonlinear control system for flight trajectory tracking of flapping Micro Aerial Vehicles (MAVs) while subjected to wind.

2004	**B.Sc**, *School of Mechanical Engineering, College of Engineering, University of Tehran*, Tehran, *Cumulative GPA: 18.02/20*
Title	*Computer-Aided Design for Vibration Analysis Using Transfer Matrix Method*
Supervisor	Dr. M. Nikkh Bahrami

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Description   During the B.Sc final project, A software has been developed to estimate Natural Frequencies and Mode Shapes of industrial rotors.

1999   **high school diploma**, *Beheshti High school affiliated with the National Organization for Development of Exceptional Talents* , QaemShahr, Mazandaran, Iran, *Cumulative GPA: 19.3/20*

Honors and Achievements

- **Distinguished industrial project**, Ministry of Science, Research and Technology, Iran, 2020.
- **Distinguished Professor** of School of Mechanical Engineering (first rank of industrial research), Iran University of Science and Technology, 2019.
- **Distinguished Professor** of School of Mechanical Engineering (first rank of industrial research), Iran University of Science and Technology, 2018.
- **Nominated lecturer** by distinguished students from the perspective of scientific and social excellence, Iran University of Science and Technology, 2017.
- **1st rank** in communication CanSat category as IDAS team adviser, 5th Iran **Cansat** Competition, Aerospace Research Institute (ARI), 2017.
- **1st rank** in photo/video mission category as IDAS team adviser, 4th Iran **Cansat** Competition, Iranian Space Research Center (ISRC), 2014.
- **3rd rank** in Bio-Payload Recovery category as SOHIDAS team adviser, 4th Iran **Cansat** Competition, Iranian Space Research Center (ISRC), 2014.
- **2nd rank in ISME 2007** (The 14th Annual International Conference Of Mechanical Engineering, Amirkabir University of Technology, Tehran, Iran) **Competitions for design and fabrication of a "Flapping Wing Aerial Vehicle"**, 2007.
- **Nominated lecturer** by students, University of Tehran, 2010.
- **Ranked 1st** among all PhD students in Mechanical Engineering in 2008, Department of Mechanical Engineering, University of Tehran, 2008.
- **Ranked 1st** among all MS students graduated in Mechanical Engineering in 2006, Department of Mechanical Engineering, University of Tehran, 2006.
- **Ranked 1st** among all BS students graduated in Mechanical Engineering in 2004, Department of Mechanical Engineering, University of Tehran, 2004.
- F.O.E. Award – University of Tehran, 2002.
- **Bronze Medal of Iranian National Mathematics Olympiad, 1998.**

Summary of Qualifications

IUST Service

2022–NOW   **Dean of the School of Mechanical Engineering**, *Iran University of Science and Technology*, Tehran

2021–2022   **Head of Applied Mechanics Department**, *School of Mechanical Engineering, Iran University of Science and Technology*, Tehran

2016–2021 **Director of Technology Development, Commercialization and Entrepreneurship Office**, *Iran University of Science and Technology*, Tehran
The main achievements:
○ Setting up and organizing the office by the Technology Transfer Department; Innovation and Intellectual Property Department; and Research and Technology administration Department;
○ Financing more than 50 knowledge-based start-ups;
○ Determining the commercialization policies and procedures for university intellectual property through the sale of technical knowledge, royalties, and the creation of knowledge-based startups by professors and students, and determining the extent of the university's share in such companies. These policies and procedures have been approved by the University Board of Trustees;
○ Placing and utilizing of more than 10 brokers in providing entrepreneurship and financial services;
○ Organizing various entrepreneurship educational short-courses for students and faculty members.

2020–2021 **Member of the Executive Committee of the Strategic Planning Council**, *Iran University of Science and Technology*, Tehran

2020–2021 **Member of the IUST Council of Safety, Health and Environment**, *Iran University of Science and Technology*, Tehran

2020–2021 **Member of the Steering Council of IUST Kish and Chabahar Branch**, *Iran University of Science and Technology*, Tehran

2016–2021 **Member of the Evaluation Committee for Knowledge-based Companies**, *Iran University of Science and Technology*, Tehran

2016–2021 **Member of the Council of IUST Technology Incubator Center**, *Iran University of Science and Technology*, Tehran

2014–2021 **Member of the the University Research and Technology Council**, *Iran University of Science and Technology*, Tehran

2013–2021 **Technology Development and Commercialization Deputy**, *IUST Research Institute, Iran University of Science and Technology*, Tehran
The main achievements:
○ Administering the establishment of more than 14 research centers with the mission of developing research achievements and knowledge-based products to meet a higher level of technology readiness (TRL);
○ Launching IUST 'TECH-ROAD' to facilitate commercialization services by providing rapid prototyping, manufacturing, finance, insurance, marketing and more;
○ Providing regulations for launching and Extending the activity of research units Including Center of Research Excellence;Center of Technology Excellence; Institute; Research and Technology Center; Research and Technology Department; Policy (Think-tank) Institute; Academy; Research Chair; Research Lab; ThinkTank Group; Industrial Clinic; Industry (Company) Desk; Industrial Liaison Office. The university board of trustees has approved these regulations;
○ Defining research and development policies for more than 27 institutes and research centers of IUST and evaluate their activities;

2014–2018 **Director of Technology Management Office**, *School of Mechanical Engineering, Iran University of Science and Technology*, Tehran

2015–2016 **Secretary of the Technology, Commercialization and Entrepreneurship Committee**, *IUST Strategic Planning Council*, Tehran

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Professional Service

2023–Now **Member of the Evaluation Committee for Knowledge-based Companies**, *SARCHESHMEH Copper Investment Company*, Tehran

2022–2023 **Member of University Research, Technology and entrepreneurship Council**, *University of Applied Science and Technology*, Tehran

2021–Now **Chairman of the Board of directors on behalf of the University**, *Science and Industry Research & Technology Fund*, Tehran
The main achievements of the Fund:
○ Issuance of guarantees up to the legal limit;
○ Granting facilities to knowledge-based companies;
○ Investing in startups;
○ Cooperation in developing the entrepreneurial ecosystem of Iran University of Science and Technology;
○ Increasing the fund's capital and creating the necessary infrastructure for the development of the fund's operations.

2020–2021 **Member of the board of directors on behalf of the University**, *Science and Industry Research & Technology Fund*, Tehran

2014–2015 **Member of University Research Council**, *Islamic Azad University E-branch*, Tehran

2014–2015 **Head of the Department of Mechanical and Aerospace Engineering**, *Islamic Azad University E-branch*, Tehran

2012–2013 **Member of the Council of Technology Incubator Center**, *Qazvin Science and Technology Park*, Qazvin

2009–2012 **Research and Technology Deputy**, *SRI Institute, ISA*, Tehran
The main achievements:
○ Development and implementation of project management, control processes and quality assurance using IT technologies;
○ Realizing the products technology tree and Assessment of their readiness level;
○ Preparing for the transition from document-based to model-based system engineering;
○ Setting up a knowledge management system.

2011 **Director of Education and Training Center of APSCO (Asia-Pacific Space Cooperation Organization) in Iran**, Tehran

2008–2009 **Technical Advisor of JTG President**, *J. Tahgigat Group (JTG)*, Tehran
JTG fields of business: Automotive, Oil and Gas, Petrochemical, Environment, Construction, Instruments, High Technology and ... industries.

2005-2006 **Deputy of Technology Incubator Center**, *University of Tehran*, Tehran
The main achievements:
○ Giving admissions to more than 17 startup companies in nanotechnology, biotechnology, information technology and management, which three of the nanotechnology companies won the national award the following years;
○ Cooperation in the establishment of the Science and Technology Park of the University of Tehran.

Industrial Experiences

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Supervising the design and installation of two steel slab numbering robots, MOBARAKEH Steel Technology and Innovation Support, and Development Company, Isfahan

Design and feasibility assessment of making an acid washing machine, MOTTAHED PARCH Company, Tehran

Project Manager, *design and manufacturing the advanced project staffed by more than 150 postgraduate and PhD experts*, Tehran

Systems engineering Manager, *in the most complicated, high technology and multidisciplinary project*, Tehran

Supervision of Power Distribution Lines by Cooperative Aerial Robots, *Niroo Research Institute*, Tehran

Design and Infrastructure Development of the unmanned vehicle, *Including more than 10 operational modes, internal engine test-bed facility, inertial system test-bed, mass measurement facility, control, path-planning and SLAM system*, Tehran

Design and Development of the Software System for Simulating the Effects of Strategic Decision, Tehran

Design and Development of the Concurrent Engineering System, *Iran National Science Foundation*, Tehran

Collaborating on the National Project of the Design and Fabrication of the Constellation for Permanent Coverage, *The Supreme Council for Science, Research and Technology*, Tehran

Intelligent and Systematic Evaluation of ICT Operators, *Communications Regulatory Authority*, Tehran

Design and Implementation of Semi-industrial Prototype of a Controller for Two-degree-of-freedom Agile Servomechanism, Tehran

Design and Collaborating in Manufacturing of the IGV Actuator for a Gas Turbine, Tehran

Sensor Group President, Tehran

Attitude control system Director, Tehran

Teaching Experiences

Graduate **Intelligent Control Systems**, *School of Mechanical Engineering*, Iran University of Science and Technology, Since fall 2013

Graduate **Adaptive Control**, *School of Mechanical Engineering*, Iran University of Science and Technology, Since spring 2014

Graduate **Mechatronics II**, *School of Mechanical Engineering*, Iran University of Science and Technology, Since fall 2015

Graduate	**Mechatronics I**, *Faculty of New Sciences and Technologies (FNST)*, University of Tehran, fall 2011
Undergraduate	**Engineering Dynamics**, *School of Mechanical Engineering*, Iran University of Science and Technology, Since fall 2013
Undergraduate	**Design Methods in Engineering**, *School of Mechanical Engineering*, Iran University of Science and Technology, Since fall 2014
Undergraduate	**Design of Machine Elements II**, *School of Mechanical Engineering*, Iran University of Science and Technology, 2013–2015
Undergraduate	**Design of Machinery (Dynamics of machines)**, *School of Mechanical Engineering*, Iran University of Science and Technology, 2013–2015
Undergraduate	**Engineering Statics**, *College of Engineering*, University of Tehran, fall 2009–2010
Undergraduate	**Mechanics of Materials**, *College of Engineering* , University of Tehran, fall 2009–2010

▬▬▬ Certificates

Intellectual Property and Patent.

PLC S7.

Industrial Networks.

Principles and Tactics of Negotiation.

Project Management Fundamental, Hormozan Project Development Co., Iran, Tehran.

Project Management Fundamental, Valense Organizational Consultants, United Kingdom.

Unified Modeling Language (UML).

Rational Unified Process (RUP).

Business Plan Evaluation.

▬▬▬ Research Interests

Hybrid Control Systems	Controller synthesis for Hybrid systems (based on hybrid Automata). A hybrid system is a dynamic system that exhibits both continuous and discrete dynamic behavior – a system that can both flow (described by a differential equation) and jump (described by a difference equation or control graph); The application of Model Predictive Control, Convex Optimization, Intelligent Control systems on Hybrid dynamical systems Controller synthesis.
Intelligent Systems	The application of Neural Network, Evolutionary Algorithms, expert systems and etc. on Controller synthesis and Optimization; Fuzzy-Control; and Nero-Fuzzy Control; The application of reinforcement learning on controller synthesis.
Soft Body Manipulation	Dynamical model of soft bodies; soft body grasping and manipulation.

▬▬▬ Technology Interests

Motion Planning	Design and fabrication motion controllers for vehicles such as aircraft, cars, satellites, ships, etc.; multi-agent path-planning; Swarm systems, Formation design, and Consensus control; Robot Operating System (ROS); Traffic scheduling; Geometry Control.
Networked Control Systems	Implementing the Internet of Things (IoT) Operating Systems and platforms, Real-time operating systems (RTOS) to develop supervisory control systems, networked control systems and embedded control systems; Industrial IoT.
Concurrent Engineering	Concurrent engineering and its relation to Issues such as Systems engineering, requirements engineering, reliability, logistics, coordination of different teams, testing and evaluation, maintainability, optimization methods, and risk management tools. Managing systems engineering overlaps with control engineering, industrial engineering, software engineering, organizational studies, and project management.

software skills

Modeling	SolidWorks, CATIA	Math	Matlab, Maple
FEM	ANSYS	Dynamics	ADAMS
Programming	C++,Python	Control	Simulink
MicroCon...	AVR, ARM	Automation	STEP7,TIA

Patents

2023 **Plant health monitoring by image processing in an Internet of Things platform for smart pots**, Inventors*: Mohammad Hossein Khodadadi, Esmaeel Khanmirza ; Assignees: Esmaeel Khanmirza, Mohammad Hossein Khodadadi, Iran University of Science and Technology.*
Patent Number/Date: 108913/2023-03-13, Patent Application Number/Date: 140150140003007385/2023-01-07, Intellectual property Office, Iran

2021 **Human face robot with the ability to simulate different facial expressions for therapeutic and diagnostic applications**, Inventors*: Esmaeel Khanmirza, Mehrdad Marandi; Assignees: Esmaeel Khanmirza, Mehrdad Marandi, Iran University of Science and Technology.*
Patent Number/Date: 106000/2021-12-26, Patent Application Number/Date: 140050140003001904/2021-05-25, Intellectual property Office, Iran

Publications

Selected Journal Papers

F. Gholami, E. Khanmirza, and M. Riahi, "Simultaneous improvement of obstacle detection accuracy and speed in cut stereo vision with ultrasonic data in smart vehicles," *Journal of Machine Vision and Image Processing*, 2023, *[Early Access]*. [Online]. Available: https://jmvip.sinaweb.net/article_172088.html

A. Safi, A. Taghavian, and E. Khanmirza, "A review on benchmarks for dynamical hybrid systems controller synthesis to facilitate its selection process," *Journal of Space Science, Technology and Applications*, vol. 2, no. 2, 2023. [Online]. Available: http://journal.isrc.ac.ir/article_164991.html

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E. Khanmirza, M. HaghBeigi, and M. Farzan, "A new incremental search method for multi-robot path planning," *Modares Mechanical Engineering*, vol. 23, no. 3, 2023. [Online]. Available: http://mme.modares.ac.ir/article-15-63177-en.html

B. Geranmehr and E. Khanmirza, "Optimal consensus control of multi-agent systems based on the state-dependent riccati equation," *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, vol. 236, no. 16, pp. 9270–9281, 2022. [Online]. Available: https://doi.org/10.1177/09544062221091526

A. Mousavi, A. H. Markazi, and E. Khanmirza, "Adaptive fuzzy sliding-mode consensus control of nonlinear under-actuated agents in a near-optimal reinforcement learning framework," *Journal of the Franklin Institute*, vol. 359, no. 10, pp. 4804–4841, 2022. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0016003222002514

H. Yadegari, J. Beyramzad, and E. Khanmirza, "Magnetorquers-based satellite attitude control using interval type-ii fuzzy terminal sliding mode control with time delay estimation," *Advances in Space Research*, vol. 69, no. 8, pp. 3204–3225, 2022. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0273117722000382

F. Gholami, E. Khanmirza, and M. Riahi, "Real-time obstacle detection by stereo vision and ultrasonic data fusion," *Measurement*, vol. 190, p. 110718, 2022. [Online]. Available: https://doi.org/10.1016/j.measurement.2022.110718

E. Khanmirza and F. Jafari, "Improving the performance of the EKF-SLAM algorithm in dynamic environments using ANFIS," *Journal of Mechanical Engineering, University of Tabriz*, vol. 52, no. 2, pp. 51–58, 2022. [Online]. Available: https://tumechj.tabrizu.ac.ir/article_13421.html

H. Safari, H. Kiadaliri, and E. Khanmirza, "Grasp analysis of soft objects using robotic gripper in the presence of an external force," *Journal of Mechanical Engineering, University of Tabriz*, vol. 52, no. 1, pp. 169–178, Spring 2022. [Online]. Available: https://tumechj.tabrizu.ac.ir/article_12873.html?lang=fa

R. Asadi, E. Khanmirza, and R. Madoliat, "Tasks assignment for cooperative unmanned aerial vehicles in dynamic environment," *Journal of Mechanical Engineering, University of Tabriz*, vol. 51, no. 4, pp. 51–58, 2022. [Online]. Available: https://tumechj.tabrizu.ac.ir/article_12893.html?lang=en

N. Yazdanjue and E. Khanmirza, "An application-specific approach for design structure matrix optimization: Focusing on the cross application of modularization and sequencing methods," *IEEE Transactions on Engineering Management*, vol. 70, no. 6, pp. 2093–2114, 2023. [Online]. Available: https://doi.org/10.1109/TEM.2021.3071324

E. Khanmirza, M. Haghbeigi, and N. Yazdanjue, "Enhanced genetic and imperialist competitive based algorithms for reducing design feedbacks in the design structure

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matrix," *IEEE Transactions on Engineering Management*, pp. 1–15, 2021, *[Early Access]*. [Online]. Available: https://doi.org/10.1109/TEM.2021.3083595

k. Taebi, E. Khanmirza, and S. M. Emamjomeh, "A new approach to design and implementation of multi-layer control in the IOT," *Modares Mechanical Engineering*, vol. 20, no. 5, pp. 1255–1269, 2020. [Online]. Available: http://mme.modares.ac.ir/article-15-36524-en.html

E. Khanmirza, M. Nazarahari, and M. Haghbeigi, "A heuristic approach for optimal integrated airline schedule design and fleet assignment with demand recapture," *Applied Soft Computing*, vol. 96, p. 106681, 2020. [Online]. Available: https://doi.org/10.1016/j.asoc.2020.106681

A. Karamali Ravandi, E. Khanmirza, S. A. Seyed Yousef, M. Valipour Arekhlou, and K. Daneshjou, "A new framework of synchronized adaptive fuzzy sliding mode control for networked under-actuated systems subjected to communication delay," *International Journal of Robotics, Theory and Applications*, vol. 7, no. 1, pp. 18–30, 2021. [Online]. Available: http://ijr.kntu.ac.ir/article_120680.html

E. Khanmirza, A. Maghsoudi, and F. Gholami, "Longitudinal speed control using model reference adaptive control for intelligent highway platform," *International Journal of Automotive Engineering*, vol. 10, no. 3, pp. 3345–3356, 2020. [Online]. Available: http://www.iust.ac.ir/ijae/article-1-399-en.html

H. R. Moetamedzadeh, E. Khanmirza, and R. Madoliat, "Transient simulation of natural gas network by hybrid taguchi binary genetic algorithm," *International Journal of Nonlinear Sciences and Numerical Simulation*, vol. 21, no. 1, pp. 51–63, 2020. [Online]. Available: https://doi.org/10.1515/ijnsns-2018-0093

S. Espahbodi Nia and E. Khanmirza, "Adaptive C-SLAM algorithm in dynamic environment," *Journal of Mechanical Engineering, University of Tabriz*, vol. 50, no. 1, pp. 9–15, 2020. [Online]. Available: https://tumechj.tabrizu.ac.ir/article_9690.html

H. R. Moetamedzadeh, E. Khanmirza, A. Pourfard, and R. Madoliat, "Intelligent nonlinear model predictive control of gas pipeline networks," *Transactions of the Institute of Measurement and Control*, vol. 41, no. 16, pp. 4569–4589, 2019. [Online]. Available: https://doi.org/10.1177/0142331219864190

A. Pourfard, E. Khanmirza, and R. Madoliat, "A novel approach for dynamic flow simulation of gas pipelines using teaching–learning-based optimization algorithm," *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, vol. 233, no. 9, pp. 3085–3099, 2019. [Online]. Available: https://doi.org/10.1177/0954406218805120

E. Khanmirza, R. Madoliat, and A. Pourfard, "Transient optimization of natural gas networks using intelligent algorithms," *Journal of Energy Resources Technology-transactions of the ASME*, vol. 141, no. 3, pp. 032 901: 1–11, 2019. [Online]. Available: https://doi.org/10.1115/1.4040073

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E. Khanmirza, K. Daneshjou, and A. Karamali Ravandi, "Hybrid force-position control of robotic arms manipulating in uncertain environment based on adaptive fuzzy sliding mode control," *Applied Soft Computing*, vol. 70, pp. 864–874, 2018. [Online]. Available: https://doi.org/10.1016/j.asoc.2018.05.048

B. Geranmehr, E. Khanmirza, and S. Kazemi, "Trajectory control of aggressive maneuver by agile autonomous helicopter," *Part G: Journal of Aerospace Engineering*, vol. 233, no. 4, pp. 1526–1536, 2019. [Online]. Available: https://doi.org/10.1177/0954410018755807

M. Nazarahari, E. Khanmirza, and S. Doostie, "Multi-objective multi-robot path planning in continuous environment using an enhanced genetic algorithm," *Expert System with Applications*, vol. 115, pp. 106–120, 2019. [Online]. Available: https://doi.org/10.1016/j.eswa.2018.08.008

E. Alimohammadi, E. Khanmirza, and H. Darvish, "Velocity tracking of cruise control system by using feedback linearization method," *International Journal of Automotive Engineering*, vol. 8, no. 4, pp. 2826–2832, 2018. [Online]. Available: http://www.iust.ac.ir/ijae/article-1-461-en.html

E. Khanmirza, K. Daneshjou, and A. Karamali Ravandi, "Underactuated flexible aerial manipulators: A new framework for optimal trajectory planning under constraints induced by complex dynamics," *Journal of Intelligent and Robotic Systems*, vol. 92, no. 3, pp. 599–613, 2017. [Online]. Available: https://doi.org/10.1007/s10846-017-0711-6

E. Khanmirza, M. Nazarahari, and M. Haghbeigi, "Schedule design and fleet assignment based on modified intelligent algorithms," *Modares Mechanical Engineering*, vol. 17, Issue 6, no. 8, pp. 59–66, August 2017, [In Persian]. [Online]. Available: http://mme.modares.ac.ir/article_16831.html

E. Khanmirza and M. Haghbeigi, "Cooperation algorithm of autonomous uavs for tracking a dynamic target in an adversarial environment," *Modares Mechanical Engineering*, vol. 17, Issue 5, no. 2, pp. 1–11, July 2017, [In Persian]. [Online]. Available: http://mme.modares.ac.ir/article_16616_0.html

E. Khanmirza, A. Mousavi, and M. Nazarahari, "Identification of piecewise affine systems based on fuzzy PCA-Guided robust clustering technique," *EURASIP Journal on Advances in Signal Processing*, vol. 2016:133, 2016. [Online]. Available: https://link.springer.com/article/10.1186/s13634-016-0427-y

E. Khanmirza, A. Esmaeilzadeh, and A. H. D. Markazi, "Design and experimental evaluation of model predictive control vs. intelligent methods for domestic heating systems," *Energy and Buildings*, vol. 152, pp. 2 – 70, 2017. [Online]. Available: https://doi.org/10.1016/j.enbuild.2017.05.074

E. Khanmirza and A. Jamalpoor, "Nanoscale mass sensor based on the vibration analysis of magneto-electro-elastic nanoplate resting on visco-pasternak substrate," *European Physical Journal Plus*, vol. 132:422, 2017. [Online]. Available: https://doi.org/10.1016/j.enbuild.2017.05.074

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E. Khanmirza, H. Darvish, F. Gholami, and E. Alimohammadi, "Improving the velocity tracking of cruise control system by using adaptive methods," *International Journal of Automotive Engineering*, vol. 6, no. 4, pp. 2244–2255, 2016. [Online]. Available: http://www.iust.ac.ir/ijae/article-1-365-en.html

R. Madoliat, E. Khanmirza, and A. Pourfard, "Application of pso and cultural algorithms for transient analysis of natural gas pipeline," *Journal of Petroleum Science and Engineering*, vol. 149, pp. 504–514, 2016. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S0920410516304545

E. Khanmirza, A. Esmaeilzadeh, and A. H. D. Markazi, "Predictive control of a building hybrid heating system for energy cost reduction," *Applied Soft Computing*, vol. 46, p. 407–423, 2016. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S156849461630206X

B. Tarvirdizadeh, A. Yousefi-Koma, and E. Khanmirza, "Development of a robust observer for general form nonlinear system: Theory, design and implementation," *International Journal of Robotics, Theory and Applications*, vol. 4, no. 2, pp. 36–47, 2016, 2008-7144. [Online]. Available: http://ijr.kntu.ac.ir/article_12524_e2e6f1cda7f201bf72b055fde6d702b5.pdf

B. Tarvirdizadeh, E. Khanmirza, M. Ebrahimi, A. Kalhor, and S. Vakilipour, "An efficient numerical and experimental system identification approach for a flexible manipulator," *Engineering Computations*, vol. 32, no. 8, pp. 2467–2490, 2015. [Online]. Available: http://www.emeraldinsight.com/doi/abs/10.1108/EC-07-2014-0146

R. Madoliat, E. Khanmirza, and H. R. Moetamedzadeh, "Transient simulation of gas pipeline networks using intelligent methods," *Journal of Natural Gas Science and Engineering*, vol. 29, pp. 517–529, 2016. [Online]. Available: http://dx.doi.org/10.1016/j.jngse.2016.01.018

M. Reza Sabaapour, E. Khanmirza, and S. Ghadami, "An anti-windup rate-varying integral control applied to electromechanical actuator," *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science*, vol. 229, no. 4, pp. 692–702, 2015. [Online]. Available: http://pic.sagepub.com/content/229/4/692.abstract

E. Khanmirza, A. Mousavi, and M. Nazarahari, "Piecewise affine hybrid system identification using adaline neural network," *Modares Mechanical Engineering*, vol. 15, no. 5, pp. 397–404, 2015, [In Persian]. [Online]. Available: http://mme.modares.ac.ir/article_12629_ad8314c6e27bfef261da57d8ac63a1f3.pdf

B. Tarvirdizadeh, E. Khanmirza, and A. Yousefi-Koma, "Robust control of flapping-wing in micro aerial vehicle to have a smooth flapping motion," *GSTF Journal on Aviation Technology*, vol. 1, 2014. [Online]. Available: DOI:0.5176/0000-0004_1.1.3

E. Khanmirza, N. Khaji, and E. Khanmirza, "Identification of linear and non-linear physical parameters of multistory shear buildings using artificial neural network,"

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