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Curriculum vitae last updated: 01/01/2025

EDUCATION

Ph.D. 2018 Engineering Sciences, Ternopil Ivan Puluj National Technical University, Ukraine
Dissertation: *„Justification of the Parameters and Orientation Bernoulli Gripping Device of the Manipulator for the Automation Grasping Operations"*

M.S. 2014 Automated Systems of Manufacturing Control, Ternopil Ivan Puluj National Technical University, Ukraine
With Honours

B.S. 2013 Automation and Computer-Integrated Technologies, Ternopil Ivan Puluj National Technical University, Ukraine

CURRENT POSITIONS

2024-present Research Associate Professor, Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Osaka, Japan

2023-present Adjunct Professor, EPAM School of Digital Technologies, American University Kyiv (Powered by Arizona State University), Ukraine

2025-future Outstanding Research Fellow, National Institute of Advanced Industrial Science and Technology (AIST), Tokyo, Japan

PREVIOUS POSITIONS

2022-2024 Research Fellow, Texas Robotics and Walker Department of Mechanical Engineering, The University of Texas at Austin, Texas, USA

2019-2023 Associate Professor, Department of Automation of Technological Processes and Manufacturing, Ternopil Ivan Puluj National Technical University, Ukraine

2021-2022 Fulbright Visiting Scholar, Department of Robotics Engineering, Worcester Polytechnic Institute, Massachusetts, USA

2020-2021 Deputy Head of the Department, Department of Automation of Technological Processes and Manufacturing, Ternopil Ivan Puluj National Technical University, Ukraine

2019-2019 Assistant Professor, Department of Automation of Technological Processes and Manufacturing, Ternopil Ivan Puluj National Technical University, Ukraine

2016-2018 Teacher Assistant, Department of Automation of Technological Processes and Manufacturing, Ternopil Ivan Puluj National Technical University, Ukraine

Fellowships and Awards

2024 Award of American University Kyiv in the nomination "Best Scientist of the Year", Ukraine

2023 Provost Early Career Fellowship Award, UT at Austin

2023 Travel Award, 2023 NSF (FRR-NRI) Aspiring PIs Meeting at Washington D.C.

2022 Outstanding Reviewer Award, Applied Sciences MDPI

2022 Machines Young Investigator Award, Machines MDPI

2022-2023 Fellowship of the Cabinet of Ministers of Ukraine for Young Scientists, Ukraine

2021-2022 Fellowship (Fulbright Visiting Scholar Program), Department of Robotics Engineering, Worcester Polytechnic Institute, USA

2020-2022 Fellowship of the Cabinet of Ministers of Ukraine for Young Scientists, Ukraine

2020 Award of Ternopil City Council in the nomination "Young scientists and researchers", Ukraine

2020 Fellowship (House of Europe), National Centre of Robotics, Slovak Republic

2019 Fellowship (Erasmus+), Institute of Automation, Robotics and Mechatronics, Technical University of Kosice, Slovak Republic

2018 Award of Ternopil State Administration and Ternopil City Council, Ukraine

2017 Fellowship (SAIA), Department of Robotics and Artificial Intelligence, Slovak University of Technology in Bratislava, Slovak Republic

Professional Memberships

2021 Institute of Electrical and Electronic Engineers, Member (IEEE)

2021 IEEE Robotics and Automation Society, Technical Committees: Robotic Hand Grasping and Manipulation, Mechanisms and Design, Soft Robotics.

Publications

Journal Articles

[J1] K. Puchała, G. Moneta, D. Lichoń, R. Grzejda, A. Bednarz, W. Mielniczek, M. Łopatka, E. Szymczyk, S. Ignatovych, & R. Mykhailyshyn, Aerial medical platform for soldiers and civils evacuation–Concept, implementation plan and assessment of adaptation possibility of existing technologies. *Advances in Science and Technology. Research Journal*, 2025, 19(2), 28-50.

[J2] R. Mykhailyshyn, A. Majewicz Fey, J. Xiao, Toward Novel Grasping of Non-Rigid Materials Through Robotic End-Effector Reorientation. *IEEE/ASME Transactions on Mechatronics*, 2024, 29(4), 2614-2624. doi: doi.org/10.1109/TMECH.2023.3337628.

[J3] I. Virgala, M. Varga, P. J. Sincak, T. Merva, R. Mykhailyshyn, M. Kelemen, Mathematical Framework for Snake Robot Motion in a Confined Space. *Applied Mathematical Modelling*. 2024. 132, 22-40.

[J4] P. J. Sincak, E. Prada, L. Mikova, R. Mykhailyshyn, M. Varga, T. Merva, I. Virgala, Sensing of Continuum Robots: A Review. *Sensors*, 2024, 24(4), 1311. doi: https://doi.org/10.3390/s24041311.

[J5] P. Maruschak, I. Konovalenko, Y. Osadtsa, V. Medvid, O. Shovkun, D. Baran, H. Kozbur, R. Mykhailyshyn, Surface Illumination as a Factor Influencing the Efficacy of Defect Recognition on the Rolled Metal Surface Using a Deep Neural Network. *Applied Sciences*, 2024, 14(6), 2591. doi: 10.3390/app14062591.

[J6] E. Prada, L. Mikova, I. Virgala, M. Kelemen, P.J. Sincak, R. Mykhailyshyn, Mathematical modeling of robotic locomotion systems. *Symmetry*, 2024, 16(3), 376. doi: 10.3390/sym16030376.

[J7] I. Beliakova, L. Kostyk, P. Maruschak, V. Medvid, V. Piscio, O. Shovkun, & R. Mykhailyshyn, The Temperature Dependence of the Parameters of LED Light Source Control Devices Powered by Pulsed Voltage. *Applied Sciences*, 2024, 14(13), 5678.

[J8] R. Mykhailyshyn, A. Majewicz Fey, J. Xiao, Finite element modeling of grasping porous materials in robotics cells. *Robotica*, Cambridge Press, 2023, 41(11), 3485-3500. doi: 10.1017/S0263574723001121.

[J9] R. Mykhailyshyn, V. Savkiv, A. Majewicz Fey, J. Xiao, Gripping Device for Textile Materials, *IEEE Transactions on Automation Science and Engineering*, 2023, 20(4), 2397–2408. doi: 10.1109/TASE.2022.3208796.

[J10] R. Mykhailyshyn, F. Duchoň, I. Virgala, P. J. Sinčák, & A. Majewicz Fey, Optimization of Outer Diameter Bernoulli Gripper with Cylindrical Nozzle. *Machines*, 2023, *11*(6), 667.

[J11] M. Psotka, F. Duchoň, R. Mykhailyshyn, T. Michal, & D. Michal, Global Path Planning Method Based on a Modification of the Wavefront Algorithm for Ground Mobile Robots. *Robotics*, 2023, 12(1), 25.

[J12] I. Stadnyk, V. Piddubnyi, R. Mykhailyshyn, I. Petrychenko, V. Fedoriv, & V. Kaspruk, The influence of rheology and design of modelling rolls on the flow and specific gravity during dough rolling and injection. *Journal of Advanced Manufacturing Systems*. 2023, 1-19.

[J13] I. Beliakova, V. Piscio, P. Maruschak, O. Shovkun, V. Medvid, & R. Mykhailyshyn, Research Control Devices for LED Light Sources under Their Operating Conditions at Elevated Temperatures. *Applied Sciences*, 2023, *13*(12), 7247.

[J14] R. Mykhailyshyn, F. Duchoň, M. Mykhailyshyn, A. Majewicz Fey, Three-Dimensional Printing of Cylindrical Nozzle Elements of Bernoulli Gripping Devices for Industrial Robots. *Robotics*. 2022; 11(6):140. doi: 10.3390/robotics11060140

[J15] R. Mykhailyshyn, V. Savkiv, P. Maruschak, J. Xiao, A systematic review on pneumatic gripping devices for industrial robots, *Transport*, vol. 37, no. 3, pp. 201-231, 2022.

[J16] R. Mykhailyshyn and J. Xiao. Influence of Inlet Parameters on Power Characteristics of Bernoulli Gripping Devices for Industrial Robots. In: *Applied Sciences*, vol. 12, no. 14, pp. 7074, 2022.

[J17] D. Hroncova, P. Sincak, T. Merva, R. Mykhailyshyn, Robot Trajectory Planning. *MM Science Journal*. doi: 10.17973/MMSJ.2022_11_2022093. 2022.

[J18] Ľ. Miková, E. Prada, M. Kelemen, V. Krys, R. Mykhailyshyn, P. J. Sinčák, & L. Leštach, Upgrade of Biaxial Mechatronic Testing Machine for Cruciform Specimens and Verification by FEM Analysis. *Machines*, 10(10), 916. 2022.

[J19] I. Boyko, M. Petryk, & R. Mykhailyshyn, Excitons in resonant tunnelling structures based on AlN/GaN/AlN/AlGaN/AlN nitride: spectral dependences and intensities of interband optical transitions. *Ukrainian Journal of Physical Optics*, 23(3), 180-191. 2022.

[J20] V. Savkiv, R. Mykhailyshyn, P. Maruschak, V. Kyrylovych, F. Duchon, & Ľ. Chovanec Gripping Devices of Industrial Robots for Manipulating Offset Dish Antenna Billets and Controlling their Shape. *Transport*. Vol. 36(1). pp. 63-74. 2021.

[J21] R. Mykhailyshyn, V. Savkiv, I. Boyko, E. Prada, & I. Virgala, Substantiation of Parameters of Friction Elements of Bernoulli Grippers With a Cylindrical Nozzle. *International Journal of Manufacturing, Materials, and Mechanical Engineering*. Vol. 11(2). pp. 17-39. 2021.

[J22] I. Diahovchenko, M. Kolcun, Z. Čonka, V. Savkiv, R. Mykhailyshyn, Progress and Challenges in Smart Grids: Distributed Generation, Smart Metering, Energy Storage and Smart Loads. *Iranian Journal of Science and Technology, Transactions of Electrical Engineering*. pp. 1-15. 2020.

[J23] V. Savkiv, R. Mykhailyshyn, F. Duchon, Gasdynamic analysis of the Bernoulli grippers interaction with the surface of flat objects with displacement of the center of mass. *Vacuum.* № 159. pp. 524 – 533. 2019.

[J24] I. Diahovchenko, R. Mykhailyshyn, D. Danylchenko, S. Shevchenko, Rogowsky coil applications for power measurement under non-sinusoidal field conditions. *Energetika*. № 65(1). pp. 14 – 20. 2019.

[J25] A. Trizuljak, F. Duchoň, J. Rodina, A. Babinec, M. Dekan, R. Mykhailyshyn, Control of a small quadrotor for swarm operation. *Journal of Electrical Engineering*. Vol. 70(1). pp. 3-15. 2019.

[J26] V. Savkiv, R. Mykhailyshyn, F. Duchon, M. Mikhalishin, Modeling of Bernoulli gripping device orientation when manipulating objects along the arc. *International Journal of Advanced Robotic Systems*. 2018.

[J27] V. Savkiv, R. Mykhailyshyn, F. Duchon, M. Mikhalishin, Energy efficiency analysis of the manipulation process by the industrial objects with the use of Bernoulli gripping devices. *Journal of Electrical Engineering*. № 68 (6). pp. 496 – 502. 2017.

[J28] V. Savkiv, R. Mykhailyshyn, F. Duchon, O. Fendo, Justification of Design and Parameters of Bernoulli-Vacuum Gripping Device. *International Journal of Advanced Robotic Systems*. 1729881417741740. 2017.

[J29] V. Savkiv, R. Mykhailyshyn, O. Fendo, M. Mykhailyshyn, Orientation Modeling of Bernoulli Gripper Device with Off-Centered Masses of the Manipulating Object. *Procedia Engineering*. № 187. pp. 264 – 271. 2017.

Other Articles

[O1] R. Mykhailyshyn, Ukrainian Volunteers Use 3D Printers to Save Lives. *IEEE Spectrum*. 2022.

[O2] V. Savkiv, R. Mykhailyshyn, V. Piscio, I.Kozbur, F. Duchon, L. Chovanec, Investigation of Object Manipulation Positioning Accuracy by Bernoulli Gripping Devices in Robotic Cells. *Scientific Journal of TNTU* (Tern.), Vol. 102 (2). pp. 21–36. 2021.

[O3] F. Duchoň, Ľ. Chovanec, R. Mykhailyshyn, V. Savkiv, Pod hlavičkou Národného centra robotiky pracujú už aj odborníci zo zahraničia. *ATP journal*. №3. pp. 54 – 55. 2017.

[O4] V. Savkiv, R. Mykhailyshyn, F. Duchon, M. Mikhalishin, Justification of the object of manipulation parameters influence on the optimal orientation and lifting characteristics of Bernoulli gripping device. *Bulletin of Kherson National Technical University*. № 2 (61). pp. 98 – 104. 2017.

[O5] R. Mykhailyshyn, V. Savkiv, Ya. Prots, Optimization of bernoulli gripping device's orientation under the process of manipulations along direct trajectory. *Scientific Journal of TNTU*. Vol. 81 (1). pp. 107 – 117. 2016.

[O6] R. Mykhailyshyn, V. Savkiv, Analysis of methods for planning trajectories of manipulators. *Collection of scientific works "Prospective technologies and devices"*. №8 (1). pp. 61 - 69. 2016.

Book Chapters/Collections

[B1] V. Savkiv, R. Mykhailyshyn, P. Maruschak, F. Duchon, Justification of Influence of the Form of Nozzle and Active Surface of Bernoulli Gripping Devices on Its Operational Characteristics. *Lecture Notes in Intelligent Transportation and Infrastructure*. Springer, 2020.

[B2] V. Savkiv, R. Mykhailyshyn, P. Maruschak, F. Duchon, O. Prentkovskis, I. Diahovchenko, Analysis of Operational Characteristics of Pneumatic Device of Industrial Robot for Gripping and Control of Parameters of Objects of Manipulation. 2020. *Lecture Notes in Intelligent Transportation and Infrastructure*. Springer, 2020.

Presentations

[V1] R. Mykhailyshyn, Advanced Robotics in Grasping and Manipulation, International scientific conference "Information Technology – New Horizons", AUK, 2024.

[V2] Mykhailyshyn, R., & Fey, A. M. (2024, June). Low-Contact Grasping of Soft Tissue Using a Novel Vortex Gripper. In 2024 International Symposium on Medical Robotics (ISMR), Atlanta, Georgia, USA.

[V3] R. Mykhailyshyn, Advanced Robotic Manipulation And HANDling, National Institute of Advanced Industrial Science and Technology (AIST), Online Interview, 2024.

[V4] R. Mykhailyshyn, Advanced Robotic Manipulation And HANDling, On Campus Interview, University of Texas at San Antonio, 2024.

[V5] R. Mykhailyshyn, Advanced Robotic Manipulation And HANDling, On Campus Interview, University of Nevada, Las Vegas, 2024.

[V6] R. Mykhailyshyn, Advanced Robotic Manipulation And HANDling, On Campus Interview, Rowan University, 2024.

[V7] R. Mykhailyshyn, A. Majewicz Fey, J. Xiao, Increasing the Holding Force of Non-Rigid Materials Through Robot End-Effector Reorientation. *IEEE/RSJ IROS 2023 Workshop on Leveraging Models for Contact-Rich Manipulation*.

[V8] R. Mykhailyshyn, A. Majewicz Fey, Low-Contact Grasping of Soft Tissue with Complex Geometry using a Novel Vortex Gripper. *IEEE/RSJ IROS 2023 Workshop on Robotics for the Gut*.

[V9] R. Mykhailyshyn, A. Majewicz Fey, Low-contact Grasping and Manipulation of Flexible Objects. *National Science Foundation (NSF) PI Meeting*, 2023, Washington D.C.

[V10] R. Mykhailyshyn, Robotic Grasping: Advanced Solutions and Practice, On Campus Interview, Mississippi State University, 2023.

Works in Progress

[W1] B. Mathur, Q.C. Schuelke, R. Mykhailyshyn, C. Park, A. Majewicz Fey, A Wearable Haptic Interface Combining Kinesthetic and Tactile Sensations for 6 DOF Haptic Guidance. *IEEE Transactions on Haptics*. Submitted.

[W2] R. Mykhailyshyn, J. Lee, M. Mykhailyshyn, A. Majewicz Fey, Dexterous Lifting of Deformable Objects by One End Using Pneumatic Gripper, *IEEE Transactions on Robotics*, Submitted.

[W3] R. Mykhailyshyn, F. Fernández, K. Harada, J. Xiao, A. Majewicz Fey, A Modern Assessment of 40-year-old Predictions and Challenges in Robotics, In process.

[W4] T. Alkis, A. Majewicz Fey, R. Mykhailyshyn, Automation of Studying Lifting Characteristics of Deformable Objects for Robotic Manipulation Operations. In process.

[W5] R. Mykhailyshyn, A. Majewicz Fey, Low-Contact Grasping of Soft Tissue with Complex Geometry using a Vortex Gripper. In process.

[W6] R. Mykhailyshyn, J. Romancik, K. Harada, A. Majewicz Fey, Minimization Vibration of Deformable Objects During Grasping by a Jet Grippers. In process.

Refereed Conference Papers

[C1] R. Mykhailyshyn, A. Majewicz Fey, Low-Contact Grasping of Soft Tissue Using a Novel Vortex Gripper. *2024 International Symposium on Medical Robotics*, 1-6, IEEE.

[C2] V. Savkiv, R. Mykhailyshyn, F. Duchon, V. Medvid, V. Piscio, I. Diahovchenko, Investigation of the Accuracy of the Base of the Object of Manipulation of Bernoulli Gripping Devices. 2021. IEEE 3rd *Ukrainian Conference on Electrical and Computer Engineering*. pp. 421-425.

[C3] I. Belyakova, V. Medvid, V. Piscio, V. Savkiv, R. Mykhailyshyn, M. Markovych, Optimization of LED Drivers Depending on the Temperature of Their Operation in Lighting Devices. IEEE 3rd *Ukrainian Conference on Electrical and Computer Engineering*. pp. 266-271. 2021.

[C4] I. Belyakova, V. Medvid, V. Piscio, V. Savkiv, R. Mykhailyshyn, M. Markovych, Systems Ignition Device for High-Pressure Gas Discharge Lamps Based on Voltage Piezoelectric Transformer. IEEE 3rd *Ukrainian Conference on Electrical and Computer Engineering* (UKRCON). pp. 459-464. 2021.

[C5] R. Mykhailyshyn, V. Savkiv, F. Duchon, L. Chovanec, Experimental Investigations of the Dynamics of Contactless Transportation by Bernoulli Grippers. IEEE 6th *International Conference on Methods and Systems of Navigation and Motion Control* (MSNMC). pp. 97-100. 2020.

[C6] V. Savkiv, R. Mykhailyshyn, P. Maruschak, I. Diahovchenko, F. Duchon, Ľ. Chovanec, V. Hutsaylyuk, Gripping devices of industrial robots for manipulating offset dish antenna billets. 13th *International Conference on Intelligent Technologies in Logistics and Mechatronics Systems*, ITELMS 2020, pp. 71–79. 2020.

[C7] R. Mykhailyshyn, V. Savkiv, I. Diahovchenko, R. Olsen, D. Danylchenko, Protection of Digital Power Meters Under the Influence of Strong Magnetic Fields. IEEE 2nd *Ukraine Conference on Electrical and Computer Engineering* UKRCON-2019. pp. 314 – 320. 2019.

[C8] R. Mykhailyshyn, V. Savkiv, I. Diahovchenko, F. Duchon, R. Trembach, Research of Energy Efficiency of Manipulation of Dimensional Objects With the Use of Pneumatic Gripping Devices. IEEE 2nd *Ukraine Conference on Electrical and Computer Engineering* UKRCON-2019. pp. 527 – 532. 2019.

[C9] I. Diahovchenko, V. Lebedynskyi, R. Mykhailyshyn, V. Savkiv, Methods to Improve the Accuracy of Power Meters through the Application of Nanomaterials and Calibration Techniques. IEEE 9th *International Conference Nanomaterials: Applications & Properties* (NAP). pp. 02NEE17-1. 2019.

[C10] V. Savkiv, R. Mykhailyshyn, P. Maruschak, L. Chovanec, E. Prada, I. Virgala, O. Prentkovskis, Optimization of design parameters of Bernoulli gripper with an annular nozzle. *Transport Means* - Proceedings of the International Conference. pp. 423-428. 2019.

[C11] V. Savkiv, R. Mykhailyshyn, P. Maruschak, F. Duchon, L. Chovanec, The analysis of influence of a nozzle form of the Bernoulli gripping devices on its energy efficiency. *Proceedings of ICCPT* 2019. pp. 66–74. 2019.

[C12] R. Mykhailyshyn, I. Belyakova, V. Medvid, V. Piscio, O. Shkodzinsky, M. Markovych, Usage of Light-Emitting-Diode Lamps in Decorative Lighting. IEEE 20th *International Conference on Computational Problems of Electrical Engineering* (CPEE). 2019. doi: 10.1109/CPEE47179.2019.8949154.

[C13] R. Mykhailyshyn, V. Savkiv, F. Duchon, V. Koloskov, I. Diahovchenko, Investigation of the energy consumption on performance of handling operations taking into account parameters of the grasping system. IEEE 3rd *International Conference on Intelligent Energy and Power Systems* (IEPS). pp. 295 – 300. 2018.

[C14] R. Mykhailyshyn, V. Savkiv, F. Duchon, V. Koloskov, I. Diahovchenko, Analysis of frontal resistance force influence during manipulation of dimensional objects. IEEE 3rd *International Conference on Intelligent Energy and Power Systems* (IEPS). pp. 301 – 305. 2018.

[C15] R. Mykhailyshyn, V. Savkiv, F. Duchon, P. Maruschak, O. Prentkovskis, Substantiation of Bernoulli Grippers Parameters at Non-Contact Transportation of Objects with a Displaced Center of Mass. 22nd *International Scientific Conference Transport Means*. pp. 1370 – 1375. 2018.

[C16] R. Mykhailyshyn, V. Savkiv, M. Mikhalishin, F. Duchon, Experimental Research of the Manipulatiom Process by the Objects Using Bernoulli Gripping Devices. In *Young Scientists Forum on Applied Physics and Engineering*, International IEEE Conference. P. 8 – 11. 2017.

Refereed Conference Abstracts

[I1] Mykhailyshyn, R., Duchon, F., Jing, X., Kelemen, M., Mykhailyshyn, M., & Majewicz Fey, A. (2024). Influence of Frictional Properties of Conveyor Systems on the Process of Robotic Manipulation of Flexible Objects. In Proceedings of the *International Scientific and Technical Conference "Applied Mechanics"*, pp. 311-313, 2024.

[I2] Mykhailyshyn, R., Mykhailyshyn, M., Duchon, F., Kelemen, M., Majewicz Fey, A., Xiao, J., Problems Modeling the Process of Manipulation Flexible Objects in Robotics. In Proceedings of the International Conference *Mathematical Methods and Models of Technical and Economic Systems*, pp. 73-75, 2022.

[I3] Savkiv, V., Mykhailyshyn, R., Duchon, F., & Kelemen, M. Substantiation of design parameters of Bernoulli grippers with automated control of the sizes of objects of manipulation. In Proceedings of the International Conference *Advanced applied energy and information technologies*, pp. 46-52, 2021.

[I4] Trembach, B., Trembach, R., Mykhailyshyn, M., Savkiv, V., & Mykhailyshyn, R. The mathematical modeling of coordinate determination of acoustic signals with priority placement of microphones. In Proceedings of the International Conference *Advanced applied energy and information technologies*, pp. 59-67. 2021.

[I5] V.B. Savkiv, R.I. Mykhailyshyn, Development of robotics at TNTU under the leadership of Professor Yaroslav Prots. Materials of the international scientific conference "*Ivan Puluy: life in the name of science and Ukraine*". Ternopil, TNTU, pp. 97-98. 2020.

[I6] V.B. Savkiv, R.I. Mykhailyshyn, M.I. Kuidan, O.V. Sydorik, Analysis of the structural scheme of the information and management system of the gas pipeline section. Materials of the VIII scientific and technical conference *Information models, systems and technologies*. Ternopil, TNTU, p. 60. 2020.

[I7] V.B. Savkiv, R.I. Mykhailyshyn, M.A. Goi, Y.V. Rylnyk, Synthesis of the automatic temperature control system in the glass furnace. Materials of the VIII scientific and technical conference *Information models, systems and technologies*. Ternopil, TNTU, pp. 59. 2020.

[I8] V.B. Savkiv, R.I. Mykhailyshyn, S.A. Trachuk, A.O. Severyn, Stream capturing devices of industrial robots with integrated control of the dimensions of manipulation objects. Materials of the 9th International Scientific and Technical Conference of Young Scientists and Students *Actual Problems of Modern Technologies*. Ternopil, TNTU, pp. 21 - 22. 2020.

[I9] R.I. Mykhailyshyn, V.B. Savkiv, R-V.M. Pavlovsky, Design and research of operational characteristics of an educational small-sized robot. Materials of the 9th International Scientific and Technical Conference of Young Scientists and Students *Actual Problems of Modern Technologies*. Ternopil, TNTU, pp. 14 - 15. 2020.

[I10] R.I. Mykhailyshyn, V.B. Savkiv, Y.R. Kravets, N.S. Minko, Modeling of the automated tool change process in a robotic cell. Proceedings of the IX International Scientific and Technical Conference of Young Scientists and Students *Actual Problems of Modern Technologies*. Ternopil, TNTU, pp. 12 - 13. 2020.

[I11] R.I. Mykhailyshyn, V.B. Savkiv, O.A. Zagoruyko, Development of an automated robotic cell programming process. Proceedings of the IX International Scientific and Technical Conference of Young Scientists and Students *Actual Problems of Modern Technologies*. Ternopil, TNTU, pp. 10 - 11. 2020.

[I12] R. Mykhailyshyn, V. Savkiv, F. Dukhon, L. Khovanets, Experimental study of the dynamics of the interaction of the jet capturer with the object of manipulation during its capture. Materials of the International Scientific and Technical Conference *Fundamental and Applied Problems of Modern Technologies.* TNTU, pp. 100–101. 2020.

[I13] R.I. Mykhailyshyn, V.B. Savkiv, S.V. Kolonyuk, R.P. Tsapyk, Research on the influence of frontal resistance forces on the force of attraction when manipulating large objects. Abstracts of the report VIII International scientific and technical conference of young scientists and students *Actual tasks of modern technologies*. Ternopil, TNTU, pp. 67-68. 2019.

[I14] T.I. Balych, R.I. Mykhailyshyn, Development of an automated system for calculating plate heat exchangers in the production of formalin solution. Abstracts of the report VIII International scientific and technical conference of young scientists and students *Actual problems of modern technologies*. Ternopil, TNTU, pp. 44-45. 2019.

[I15] V.R. Yatsulyak, R.I. Mykhailyshyn, The influence of wheat grain moisture on its flour properties. Abstracts of the report VIII International scientific and technical conference of young scientists and students *Actual tasks of modern technologies*. Ternopil, TNTU, pp. 92 - 93. 2019.

[I16] I.R. Kozbur, O.P. Shovkun, V.B. Savkiv, R.I. Mykhailyshyn, Determination of dynamic and frequency characteristics of the electromagnetic vibration drive of the feeder with automatic phase adjustment of the excitation frequency. IV International Scientific and Technical Conference *Theoretical and Applied Aspects of Radio Engineering, Instrumentation and Computer Technologies*. TNTU, pp. 192 – 196. 2019.

[I17] V.B. Savkiv, R.I. Mykhailyshyn, F. Dukhon, M. Kelemen, Analysis of power characteristics of a jet gripping device for manipulating textile materials. 4th International Scientific and Technical Conference *Theoretical and Applied Aspects of Radio Engineering, Instrumentation and Computer Technologies*. TNTU, pp. 229 – 232. 2019.

[I18] V.B. Savkiv, R.I. Mykhailyshyn, V.P. Pistio, Automated system for the experimental study of operational parameters of jet capture devices. IV International Scientific and Technical Conference *Theoretical and Applied Aspects of Radio Engineering, Instrumentation and Computer Technologies*. TNTU, pp. 233 – 235. 2019.

[I19] V.B. Savkiv, R.I. Mykhailyshyn, I.R. Kozbur, A.A. Mykytyshyn, Analysis of the load-carrying capacity of the jet ejection gripper of an industrial robot when manipulating objects with holes. *XXI scientific conference of Ternopil National Technical University*, pp. 89 – 90. 2019.

[I20] R.I. Mykhailyshyn, P.V. Gelzhynskyi, O.T. Tymkiv, Analysis of the structure and characteristics of the automated system for measuring the corrosion rate of metals. Collection of abstracts of reports of the VII International scientific and technical conference of young scientists and students *Actual tasks of modern technologies*. pp. 264-265. 2018.

[I21] R.I. Mykhailyshyn, M.V. Isaevich, V.A. Kutikin, Analysis of the structure of the automated system of visualization and control of car movement parameters. Collection of abstracts of reports of the VII International scientific and technical conference of young scientists and students *Actual tasks of modern technologies*. pp. 262-263. 2018.

[I22] R.I. Mykhailyshyn, V.B. Savkiv, T.A. Yushchak, Research of energy efficiency of loading and unloading operations using vacuum capture devices. In VII International scientific and technical conference of young scientists and students *Actual tasks of modern technologies*. TNTU, pp. 137-138. 2018.

[I23] R.I. Mykhailyshyn, V.B. Savkiv, F. Duchon, Justification of the design parameters of the industrial robot's jet gripping device. 25th *International Conference on Automatic Control "Automatics 2018"*. Lviv Polytechnic National University, 2018.

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[I25] R.I. Mykhailyshyn, V.B. Savkiv, V. Medvid, V. Pistio, Analysis of power characteristics of jet ejection capture devices for spherical objects. IV International Scientific and Practical Conference: "*Modern Technologies of the Industrial Complex: Basic Process Innovations*". Kherson National Technical University, 2018.

[I26] V.B. Savkiv, R.I. Mykhailyshyn, O. Borukh, Analysis of energy consumption of a jet trap during loading and unloading operations. Materials of the International Scientific and Technical Conference "*Fundamental and Applied Problems of Modern Technologies*", pp. 137-138. 2018.

[I27] V.B. Savkiv, R.I. Mykhailyshyn, F. Duchon, Determination of power and consumption characteristics of a jet-vacuum capture device. Materials of the International Scientific and Technical Conference "*Fundamental and Applied Problems of Modern Technologies*, 2018. pp. 135-136.

[I28] R.I. Mykhailyshyn, V.B. Savkiv, I.R. Kozbur, Determination of force characteristics of gripping devices during transportation of objects along an arc trajectory. *Transport: mechanical engineering, operation, materials science*. International scientific and technical conference. Kherson State Maritime Academy, pp. 45 – 46. 2017.

[I29] R. Mykhailyshyn, V. Savkiv, F. Duchon, M. Mykhailyshyn, Analysis of the influence of mass and dimensional parameters of objects of manipulation on the required load capacity of jet capture devices. *Theoretical and applied aspects of radio engineering and instrumentation*. Materials of the 3rd All-Ukrainian Scientific and Technical Conference. pp. 167 – 169. 2017.

[I30] R.I. Mykhailyshyn, V.B. Savkiv, M.S. Mykhailyshyn, Analysis of the energy efficiency of the process of manipulating production facilities using jet capture devices. 20th *scientific conference of the Ternopil National Technical University*. TNTU, pp. 39 – 40. 2017.

[I31] R. Mykhailyshyn, Analysis of the influence of the parameters of the basic elements of the jet capture device on its load-carrying capacity. *Theoretical and applied aspects of radio engineering and instrumentation*, Materials of the 3rd All-Ukrainian Scientific and Technical Conference. pp. 164 – 166. 2017.

[I32] V.B. Savkiv, R.I. Mykhailyshyn, Ya.I. Prots, Development of an algorithm for ensuring software orientation of a jet capturing device in the process of manipulation along a straight path. Proceedings of the 19th *scientific conference of Ternopil National Technical University*. Ternopil, pp. 71 – 72. 2016.

[I33] V.B. Savkiv, R.I. Mykhailyshyn, Ya.I. Prots Methods of planning manipulator trajectories. Collection of abstracts of reports of the 7th International scientific and technical conference "*Modern energy installations on transport, technologies and equipment for their maintenance*" Kherson State Maritime Academy, pp. 104-105. 2016.

[I34] V.B. Savkiv, R.I. Mykhailyshyn, Ya.I. Prots, Research of rotating jet capture devices. Collection of theses of reports of the International Scientific and Technical Conference "*Fundamental and Applied Problems of Modern Technologies*". Ternopil, pp. 123-123. 2015.

[I35] V.B. Savkiv, R.I. Mykhailyshyn, Ya.I. Prots, Kinematic calculation of manipulator trajectories. Collection of abstracts of reports of the IV *International scientific and technical conference of young scientists and students*, Ternopil, pp. 123-123. 2015.

PATENTS

[P1] B. Mathur, Q.C. Schuelke, R. Mykhailyshyn, A. Majewicz Fey, A Wearable Haptic Interface Combining Kinesthetic and Tactile Sensations for 6 DOF Haptic Guidance. Submitted.

[P2] R. Mykhailyshyn, A. Majewicz Fey, Device, system and method for low-contact gripper for soft tissues. Submitted.

[P3] V. Savkiv, R. Mykhailyshyn, Patent 126631 UA, IPC B25J 15/00. Contactless jet gripping device. 09.11.2022.

[P4] V. Savkiv, R. Mykhailyshyn, Patent 142749 UA, IPC B25J 15/00. Contactless jet gripping device. 25.06.2020.

[P5] V. Savkiv, R. Mykhailyshyn, Patent 119726 UA, IPC B25J 15/00. Jet gripping device. 10.10.2017.

[P6] V. Savkiv, R. Mykhailyshyn, Patent 119819 UA, IPC B25J 15/00. Contactless jet gripping device. 10.10.2017.

GRANTS AND CONTRACTS

Ongoing:

[OG1] Texas Robotics AIP Research Fund Award "Dexterous Fingers for Delicate Grasping with Low Contact Capabilities", L. Sentis (PI), A. Majewicz Fey (PI), R. Mykhailyshyn (Co-I) - 2024: $72,000.

Previous:

[G1] DF 241-18, "*Optimization of Design Parameters of Contactless Jet Gripping Devices of Industrial Robots*" R. Mykhailyshyn (PI), - (2018, № state registration 0118U001798) $20000 in 6 months (support 1 master student). In addition was purchased a 3D printer (Wanhao duplicator 6) and material for creating an automated installation for study the operational characteristics of grippers.

[G2] PS00322778, "Substantiation Parameters of Gripping Devices of Industrial Robots and Methods of Manipulation of Flexible Objects" (2021-2022, Fulbright Grant, U.S. Department of State (DOS), Bureau of Educational and Cultural Affairs (ECA), Exchange Visitor Program #G-1-00005 with the cooperation of the Institute of International Education (IIE)) R.

Mykhailyshyn (PI) - $30600 in 9 months.

[G3] VK 55-16, "Development of Models for Optimizing the Orientation of the Industrial Robot Brush" V. Savkiv (PI), R. Mykhailyshyn (Co-I) - (2016-2018, № state registration 0116U005075) $12000 in 3 years (support 1 Ph.D. student).

[G4] DI 228-16, "Diagnostic Parameters and Mechanical Aspects of Mesoscopic Deformation Relief Formation on the Surface of Operated Steels" P. Maruschak (PI), R. Mykhailyshyn (Co-I) - (2016-2018, № state registration 0116U006422) $140,000 in 3 years (support 1 Ph.D. and 2 master students).

[G5] DI 244-20, "Development of a Diagnostic Complex Based on Deep Neural Networks for the Recognition of Multiple Surface Defects of Metal Structures" I. Konovalenko (PI),P. Maruschak (Co-I), R. Mykhailyshyn (Co-I) - (2020-2022, № state registration 0120U101924) $150,000 in 3 years (support 2 master student).

[G6] DI 232-17, "Development of a New Method for Technical Diagnosis of Welds of Main Gas Pipelines Based on Statistical Analysis of Their Structural Heterogeneity" P. Maruschak (PI), R. Mykhailyshyn (Co-I) - (2017-2019, № state registration 0117U002245) $128,000 in 3 years (support 1 Ph.D. and 1 master students).

[G7] DI 238-20, "Development of transport and technical systems with elastic and elastic helical working bodies" O. Lyashuk (PI), I. Hevko (Co-I), R. Mykhailyshyn (Co-I) (2020-2022, state registration number 0120U101916) - $125,000 (support 1 master student).

ADVISING

2024-present Co-advising 2 graduate students, Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Osaka, Japan

2023-present 2 graduate students EPAM School of Digital Technologies, American University Kyiv (Powered by Arizona State University), Ukraine

2022-present 3 graduate and 3 undergraduate students Texas Robotics, Cockrell School of Engineering, The University of Texas at Austin, Texas, USA

2018-2021 7 graduate and 10 undergraduate students Faculty of Applied Information Technologies and Electrical Engineering, Ternopil Ivan Puluj National Technical University, Ukraine

TEACHING EXPERIENCE

2024 **SDT 105: Computer Systems Fundamentals and Assembly Language**
American University Kyiv (Powered by Arizona State University), Ukraine
(Taught 1 time, ~15 students) This course based on the Arizona State University Universal learner course CSE230: Computer Organization and Assembly Language Processing and SER 232: Computer Systems Fundamentals. Computer Systems Fundamentals and Assembly Language deal with lower-level computer programming—machine or assembly language, and how these are used in the typical computer system. An assembler can translate a program from assembly language into a loader code for loading into the computer's memory for execution.

2023 **SDT 170 Introduction to Engineering**
American University Kyiv (Powered by Arizona State University), Ukraine
(Taught 1 time, ~15 students) This introduces the engineering design process, basic engineering skills, and provides opportunities to learn about and use various engineering tools and software. The course will also teach basic written and oral communication skills

important for communicating technical information effectively. Student will learn to work in a team environment, using design methods to address multi-disciplinary real-world engineering design problems.

2023 SDT 200 Computer Organization and Assembly Language Programming
American University Kyiv (Powered by Arizona State University), Ukraine
(Taught 1 time, ~15 students) This course focus on register-level computer organization, instruction set architecture, assembly language, processor organization and design, memory organization, IO programming, exception/interrupt handling.

2022-2023 ME 348E Advanced Mechatronics (guest lecturing)
The University of Texas at Austin, USA
(Guest 2 time, ~30 students) Integrated use of mechanical, electrical, and computer systems for information processing and control of machines and devices. System modeling, electromechanics, sensors and actuators, basic electronics design, signal processing and conditioning, noise and its abatement, grounding and shielding, filters, and system interfacing techniques.

2024 RBT350: Gateway to Robotics (guest lecturing)
The University of Texas at Austin, USA
(Guest 1 time, ~30 students) Robotics is a multi-disciplinary field that combines elements from mechanical engineering, electrical engineering, aerospace engineering and computer science. A full-fledged roboticist needs to be familiar with the fundamental concepts from each of these knowledge areas, from the lowest level construction and control to the most abstract planning, reasoning and learning, in order to best combine them and create more autonomous and efficient machines. This course provides an overview of the foundational elements of robotics. It covers topics from different disciplines organized in three parts: 1) how to build a robot (mechanics, materials), 2) how to make a robot move, and 3) how to program a robot.

2021-2021 Basics of Mechatronics and Robotics
Ternopil Ivan Puluj National Technical University, Ukraine
(Taught 1 time, ~16 students) The objective of this course is to consider what are robots, drives, sensors, kinematics, controllers, types and methods of control. This is completely my course, where the students have obtained comprehensive basic theoretical knowledge and practical skills in the field of mechatronics and robotics. The course is organized in such a way that 50 percent of the point's students receive during laboratory work to acquire practical skills and the rest through tests in the distance learning system.

2018-2021 Flexible Computer Systems and Robotics
Ternopil Ivan Puluj National Technical University, Ukraine
(Taught 3 times, ~36 students) The objective of this course is to students study the principles of building flexible computerized systems, features of the structure and functioning of industrial robots, and familiarization with the main types of robotic complexes used in various industries. My contributions were the development and implementation of both lecture and laboratory classes on robot programming in the RobotStudio software environment.

2018-2021 Object-Oriented Programming
Ternopil Ivan Puluj National Technical University, Ukraine
(Taught 3 times, ~25 students) The objective of this course is to understand a computer programming model that organizes software design around data, or objects, rather than

functions and logic. My contributions were the implementation of a laboratory course for students majoring in "Automation and computer-integrated technologies".

2016-2021 Automation of Manufacturing Processes

Ternopil Ivan Puluj National Technical University, Ukraine

(Taught 6 times, ~50 students, geared towards special topics of the food industry) The objective of this course is to raise the general educational theoretical and practical professional level of future specialists in the food industry by familiarizing them with modern systems of automatic regulation of technological parameters characterizing the quality of raw materials, semi-finished, and finished products. My contributions were the development: parts of the course devoted to the use of robotic cells in the food industry; and parts of a laboratory course devoted to robotic packaging of semi-finished and finished products.

PROFESSIONAL SERVICE

International Program, Editorial, and Review Committees

2024-2025 Guest Editor - Special Issue "Advanced Grasping and Motion Control Solutions, Volume II", *Robotics*

2024 Topical Advisory Panel Member, *Robotics*

2023 Editor Board Member, *Transport*

2023 Topical Advisory Panel Member, *Machines*

2022-2024 Guest Editor - Special Issue "Advanced Grasping and Motion Control Solutions", *Robotics*

2022 Review Editor, *Frontiers in Robotics and AI*

2022 Selection Committee for the Fulbright Program (Visiting Scholar)

2021 Grant Reviewer, Ministry of Education and Science Ukraine

2021 Reviewer of Projects under the Fulbright Program (Graduate Student, Research and Development, Visiting Scholar)

Administrative and Organizational Committees and Workshops

2025 Member of the Scientific Committee, International Scientific Conference Transbaltica 2025: Transportation Science and Technology (Transbaltica 2025), Vilnius, Lithuania

2025 Member of the Program Committee, International Conference on Smart Innovations in Energy and Mechanical Systems (SIEMS), National University Zaporizhzhia Polytechnic, 2025, Ukraine

2024 Member of the Scientific Committee, International Workshop on «Computer Information Technologies in Industry 4.0» (CITI-2024), TNTU, Ukraine

2024 Member of the Scientific Committee, VII International Scientific and Technical Conference "Lighting and Power Engineering: History, Problems and Perspectives " 2024, Ternopil, TNTU, Ukraine

2024 Member of the Scientific Committee, International Scientific Conference Transbaltica 2024: Transportation Science and Technology (Transbaltica 2024), Vilnius, Lithuania

2024 Member of the Scientific Committee, International Scientific Conference "Applied Mechanics", Ternopil, TNTU, Ukraine

2023 Member of the Scientific Committee, International Scientific Conference Transbaltica 2023: Transportation Science and Technology (Transbaltica 2023), Vilnius, Lithuania

2023 Member of the Review Committee, International Workshop on «Computer Information Technologies in Industry 4.0» (CITI-2023), TNTU, Ukraine

2022 Member of the Organizing Committee, Mathematical Methods and Models of Technical and Economic Systems, TNTU, Ukraine

2021 Moderator Track 3: Industrial and Power Electronics & Energy Systems, IEEE 3rd Ukrainian Conference on Electrical and Computer Engineering (UKRCON), Ukraine

2019 Member of the Organizing Committee, IV International Scientific and Technical Conference "Theoretical and Applied Aspects of Radio Engineering, Instrumentation and Computer Technology", Ukraine.

Ph.D. committee

2023 Member of Ph.D. committee, Anton Kravchuk «Multi-level System of Initial Design of Collaborative Robotic Mechano-Assembly Technologies», Supervisor: Valery Kyrylovych.

Reviews

Journal paper reviews: IEEE Transactions on Automation Science and Engineering; IEEE Robotics and Automation Letters; IEEE Access; Physics of Fluids; Journal of Computational Design and Engineering; International Journal of Advanced Robotic Systems; Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science; International Journal of Manufacturing, Materials, and Mechanical Engineering; Machines; Applied Sciences; Robotics; Frontiers in Manufacturing Technology; IEEE RAS Young Reviewers Program; AgriEngineering; International Journal of Big Data Intelligence and Applications; Electronics; Energies; Mathematics; Micromachines; Processes; Symmetry.

Conference paper reviews: IEEE International Conference on Robotics and Automation (ICRA); IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE International Conference on Intelligent Energy and Power Systems; IEEE Ukrainian Conference on Electrical and Computer Engineering, and many others.

UNIVERSITY SERVICE

2020-2022 Deputy Chairman of the Council of Young Scientists and Specialists of the Ternopil Ivan Puluj National Technical University, Ukraine

2020-2022 Member of the Academic Council of the Faculty of Applied Information Technologies and Electrical Engineering, Ternopil Ivan Puluj National Technical University, Ukraine

2018-2021 Secretary of the Scientific and Methodical Council of the Faculty of Applied Information Technologies and Electrical Engineering, Ternopil Ivan Puluj National Technical University, Ukraine

2018-2021 Member of committees for the defence of diploma projects of the Faculty of Applied Information Technologies and Electrical Engineering, Ternopil Ivan Puluj National Technical University, Ukraine

OUTREACH SERVICE

Community Service

2024-2025 Awards and Recognition Chair of IEEE Ukraine Section

2022 Invited Talk «Robotic Gripper Design» at Austin Community College, Austin, Texas, USA

2020 Initiator of the signing of the cooperation agreement between the company IntraMotion Ukraine LLC and Ternopil National Technical University, Ukraine

2020 Initiator of the signing of the cooperation agreement between the National Center of Robotics (Slovakia) and Ternopil National Technical University, Ukraine

2018-2019 Co-organizer of "Science Days" at Ternopil, Ukraine

2016-2020 Co-organizer of "Science Night" at Ternopil, Ukraine

Education Service

2021 Organizer and Lecturer of free courses for students "3D modeling and 3D printing", Ukraine

2018 Organizer of excursion for students majoring in "Automation and Computer-Integrated Technologies" to the electronics manufacturing plant "Flextronics International Ltd." (Mukachevo, Transcarpathian region, Ukraine)

Major Collaborations

Kensuke Harada,	Robotics, Department of Systems Innovation, Graduate School of Engineering Science, Osaka University, Osaka, Japan.
Yukiyasu Domae,	Robotics Manipulation, Team Leader of the Automation Research Team at ICPS Research Center, National Institute of Advanced Industrial Science and Technology (AIST), Japan.
Ann Majewicz Fey,	Surgical Robotics, Walker Department of Mechanical Engineering, The University of Texas at Austin, USA.
Jing Xiao,	Robotics, Department of Robotics Engineering, Worcester Polytechnic Institute, USA.
František Duchoň,	Robotics, Department of Robotics and Artificial Intelligence, Slovak University of Technology in Bratislava, Slovak Republic.
Fernando Fernandez,	Social Robotics and AI, Department of Computer Science and Engineering, Universidad Carlos III de Madrid (UC3M), Spain.
Pavlo Maruschak	Mechanical Engineering, Ternopil Ivan Puluj National Technical University, Ukraine.
Ivan Virgala,	Robotics, Institute of Automation, Robotics, and Mechatronics, Technical University of Kosice, Slovak Republic.
Illia Diahovchenko,	Electrical Engineering, Instituto de Investigación Tecnológica, Madrid, Spain.
Volodymyr Savkiv,	Gripping Design, Ternopil Ivan Puluj National Technical University, Ukraine.
Valery Kyrylovych,	Robotics, Zhytomyr State Technological University, Ukraine.
Michal Kelemen,	Robotics, Institute of Automation, Robotics and Mechatronics, Technical University of Kosice, Slovak Republic.
Olegas Prentkovskis,	Transportation, Faculty of Transport Engineering, Vilnius Gediminas Technical University, Lithuania.