

Adaptive industrial robots using machine vision

Kuts, Vladimir; Otto, Tauno; Tähemaa, Toivo; Bukhari, Khuldoon; Patariaia, Tengiz ASME 2018 International Mechanical Engineering Congress and Exposition, Pittsburgh, Pennsylvania, USA, November 9–15, 2018 2018 / Paper No. IMECE2018-86720, pp. V002T02A093, 8 p. : ill <https://doi.org/10.1115/IMECE2018-86720>

Advancement in production engineering education through Virtual Learning Factory Toolkit concept

Mahmood, Kashif; Otto, Tauno; Kuts, Vladimir Proceedings of the Estonian Academy of Sciences 2021 / p. 374-382 : ill <https://doi.org/10.3176/proc.2021.4.02> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Applications of digital twin across industries : a review

Singh, Maulshree; Srivastava, Rupal; Fuenmayor, Evert; Kuts, Vladimir; Qiao, Yuansong; Murray, Niall; Devine, Declan Applied sciences 2022 / art. 5727 <https://doi.org/10.3390/app12115727>

An approach to analyze the performance of advanced manufacturing environment

Mahmood, Kashif; Otto, Tauno; Golova, Jelena; Kangru, Tavo; Kuts, Vladimir Procedia CIRP 2020 / p. 628–633 <https://doi.org/10.1016/j.procir.2020.04.042> [Conference Proceedings at Scopus](#) [Article at Scopus](#)

An approach to develop a digital twin for industry 4.0 systems : manufacturing automation case studies

Guerra-Zubiaga, David; Kuts, Vladimir; Mahmood, Kashif; Bondar, Alex; Nasajpour-Esfahani, Navid; Otto, Tauno International Journal of Computer Integrated Manufacturing 2021 / p. 933-949 : ill <https://doi.org/10.1080/0951192X.2021.1946857> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Augmented reality interface for industrial robot control and teleoperation

Ordile, Laura; Bondarenko, Yevhen; Pizzagalli, Simone Luca; Kuts, Vladimir; Otto, Tauno EuroXR 2021: Proceedings of the Virtual EuroXR Conference 2021 / p. 15-19 <https://sarjaweb.vtt.fi/pdf/technology/2021/T395.pdf> <https://doi.org/10.32040/2242-122X.2021.T395>

Collaborative work between human and industrial robot in manufacturing by advanced safety monitoring system

Kuts, Vladimir; Sarkans, Martinš; Otto, Tauno; Tähemaa, Toivo Annals of DAAAM for 2017 and proceedings of the 28th International DAAAM Symposium "Intelligent Manufacturing & Automation" : 8-11 November 2017, Zadar, Croatia 2017 / p. 0996-1001 : ill <https://dx.doi.org/10.2507/28th.daaam.proceedings.138>

Concept of the test Bench for electrical vehicle propulsion drive data acquisition

Rassõlkin, Anton; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 35-42 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249078>

Development of a smart workstation by using AR technology

Värno, Kätlin; Mahmood, Kashif; Otto, Tauno; Kuts, Vladimir Proceedings of the 30th International DAAAM Symposium : Intelligent Manufacturing & Automation, 23-26th October 2019, Zadar, Croatia 2019 / 1061-1067 : ill <https://doi.org/10.2507/30th.daaam.proceedings.148>

Development of a smart workstation by using AR technology

Värno, Kätlin; Otto, Tauno; Mahmood, Kashif; Kuts, Vladimir The application track, posters and demos of EuroVR : Proceedings of the 16th Annual EuroVR Conference - 2019 2019 / p. 19–22 : ill <https://doi.org/10.32040/2242-122X.2019.T357> <https://www.vttresearch.com/sites/default/files/pdf/technology/2019/T357.pdf>

Development of virtual learning factory toolkit for production engineering education

Mahmood, Kashif; Otto, Tauno; Kuts, Vladimir; Terkaj, Walter; Urgo, Marcello; Haidegger, Geza IOP conference series : materials science and engineering 2021 / art. 012039, 8 p <https://doi.org/10.1088/1757-899X/1140/1/012039>

Digital Twin : concept of hybrid programming for industrial robots - use case

Kuts, Vladimir; Sarkans, Martinš; Otto, Tauno; Tähemaa, Toivo; Bondarenko, Yevhen ASME 2019 International Mechanical Engineering Congress and Exposition : conference proceedings 2019 / Paper No: IMECE2019-10583, V02BT02A005; 8 pages <https://doi.org/10.1115/IMECE2019-10583>

Digital Twin : industrial robot kinematic model integration to the virtual reality environment

Kuts, Vladimir; Cherezova, Natalia; Sarkans, Martinš; Otto, Tauno Journal of machine engineering 2020 / p. 53–64 <https://doi.org/10.36897/jme/120182> [Journal metrics at Scopus](#) [Article at Scopus](#)

Digital Twin : universal user interface for online management of the manufacturing system

Kuts, Vladimir; Bondarenko, Yevhen; Gavriljuk, Marietta; Partyshev, Andriy; Jegorov, Sergei; Pizzagalli, Simone Luca; Otto, Tauno Proceedings of the ASME 2021 International Mechanical Engineering Congress and Exposition 2021 / paper no: IMECE2021-69092, 7 p <https://doi.org/10.1115/IMECE2021-69092>

Digital twin as human-robot interaction validation tool

Kuts, Vladimir 19th International Symposium "Topical problems in the field of electrical and power engineering. Doctoral school of energy and geotechnology. III" : Tartu, Estonia, January 14-17, 2020 2020 / p. 27-28 : ill https://www.ester.ee/record=b5291755*est

Digital twin as industrial robots manipulation validation tool

Kuts, Vladimir; Marvel, Jeremy A.; Aksu, Murat; Pizzagalli, Simone Luca; Sarkans, Martinš; Bondarenko, Yevhen; Otto, Tauno Robotics 2022 / art. 113 <https://doi.org/10.3390/robotics11050113> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Digital twin based learning from demonstration system for industrial robots

Bondarenko, Yevhen; Pizzagalli, Simone Luca; Kuts, Vladimir; Petlenkov, Eduard; Otto, Tauno Proceedings of the ASME 2023 International Mechanical Engineering Congress and Exposition 2023

Digital twin based synchronised control and simulation of the industrial robotic cell using virtual reality

Kuts, Vladimir; Otto, Tauno; Tähemaa, Toivo; Bondarenko, Yevhen Journal of machine engineering 2019 / p. 128–145 : ill <https://doi.org/10.5604/01.3001.0013.0464> [Journal metrics at Scopus](#) [Article at Scopus](#)

Digital twin based synchronized control and simulation of the industrial robotic cell using virtual reality

Kuts, Vladimir 18th International Symposium "Topical Problems in the Field of Electrical and Power Engineering". Doctoral School of Energy and Geotechnology III : Toila, Estonia, January 14-19, 2019 : [proceedings] 2019 / p. 87-88 : ill https://www.ester.ee/record=b5183874*est

Digital twin for FANUC robots: Industrial robot programming and simulation using virtual reality

Garg, Gaurav; Kuts, Vladimir; Anbarjafari, Gholamreza Sustainability (Switzerland) 2021 / Art. 10336 <https://doi.org/10.3390/su131810336> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Digital twin for propulsion drive of autonomous electric vehicle

Rassõlkin, Anton; Kuts, Vladimir; Kallaste, Ants; Vaimann, Toomas 2019 IEEE 60th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), 7-9 October 2019 : conference proceedings 2019 / 4 p. : ill <https://doi.org/10.1109/RTUCON48111.2019.8982326>

Digital twin of an electrical motor based on empirical performance model

Rassõlkin, Anton; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir; Partyshev, Andriy 2020 XI International Conference on Electrical Power Drive Systems (ICEPDS), Saint-Petersburg, Russia, October 4-7, 2020 2020 / p. 11-14 : ill <https://doi.org/10.1109/ICEPDS47235.2020.9249366>

Digital twin service unit development for an EV induction motor fault detection

Rjabtšikov, Viktor; Ibrahim, Mahmoud; Asad, Bilal; Rassõlkin, Anton; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir; Stępien, Mariusz; Krawczyk, Mateusz 2023 IEEE International Conference on Electric Machines and Drives (IEMDC) 2023 / 5 p <https://doi.org/10.1109/IEMDC55163.2023.10239085>

Digital Twin service unit for AC motor stator inter-turn short circuit fault detection

Rjabtšikov, Viktor; Rassõlkin, Anton; Asad, Bilal; Vaimann, Toomas; Kallaste, Ants; Kuts, Vladimir; Jegorov, Sergei; Stępien, Mariusz; Krawczyk, Mateusz 2021 28th International Workshop on Electric Drives : Improving Reliability of Electric Drives (IWED) 2021 <https://doi.org/10.1109/IWED52055.2021.9376328>

Digital twin simulations based reinforcement learning for navigation and control of a wheel-on-leg mobile robot

Alsaleh, Saleh Ragheb Saleh; Tepljakov, Aleksei; Tamre, Mart; Kuts, Vladimir; Petlenkov, Eduard Proceedings of ASME 2022 International Mechanical Engineering Congress and Exposition (IMECE2022), 2B: Columbus, Ohio, USA, October 30 - November 3, 2022 2022 / art. IMECE2022-95411, V02BT02A025, 8 p <https://doi.org/10.1115/IMECE2022-95411>

Dissemination of engineering education at schools and its adjustment to needs of enterprises

Ševtšenko, Eduard; Karaulova, Tatjana; Igavens, Maris; Kuts, Vladimir Annals of DAAAM for 2017 and proceedings of the 28th International DAAAM Symposium "Intelligent Manufacturing & Automation" : 8-11 November 2017, Zadar, Croatia 2017 / p. 44-53 : ill <http://dx.doi.org/10.2507/28th.daaam.proceedings.006>

Enabling the teaching factory leveraging a virtual reality system based on the digital twin

Kuts, Vladimir; Otto, Tauno; Caldarola, Enrico G.; Modoni, Gianfranco E.; Sacco, Marco The Industrial Track of EuroVR 2018: Proceedings of the 15th Annual EuroVR Conference 2018 / p. 26–31 : ill <https://www.vtt.fi/inf/pdf/technology/2018/T339.pdf>

Evaluation of virtual reality interface interaction methods for digital twin industrial robot programming and control, a pilot study

Pizzagalli, Simone Luca; Kuts, Vladimir; Bondarenko, Yevhen; Otto, Tauno Proceedings of the ASME 2021 International Mechanical Engineering Congress and Exposition 2021 / paper no: IMECE2021-69408, 9 p <https://doi.org/10.1115/IMECE2021-69408>

Forestry crane immersive user interface for control and teleoperation

Pizzagalli, Simone Luca; Bondarenko, Yevhen; Baykara, Baris Cem; Niidas, Alar; Kuts, Vladimir; Kerm, Margus; Otto, Tauno Proceedings of ASME 2022 International Mechanical Engineering Congress and Exposition (IMECE2022), 2B: Columbus, Ohio,

A framework for the design and use of virtual labs in digital engineering education

Terkaj, Walter; Pessot, Elena; **Kuts, Vladimir; Bondarenko, Yevhen; Pizzagalli, Simone Luca**; Kleine, Kari AIP conference proceedings 2024 / art. 030003 <https://doi.org/10.1063/5.0189669>

Implementation of Digital Twins for electrical energy conversion systems in selected case studies

Rassõlkin, Anton; Orosz, Tamas; Demidova, Galina; Kuts, Vladimir; Rjabtšikov, Viktor; Vaimann, Toomas; Kallaste, Ants Proceedings of the Estonian Academy of Sciences 2021 / p. 19-39 : ill <https://doi.org/10.3176/proc.2021.1.03> https://doi.org/wp-content/plugins/kirj/pub/proc-1-2021-19-39_20210201183802.pdf [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Implementing interdisciplinarity in career guidance for secondary school students in forestry and wood, metal and machinery, agriculture and food sectors of industry

Ševtšenko, Eduard; Karaulova, Tatjana; Igavens, Maris; Kuts, Vladimir Holistinis mokymasis = Holistic learning 2017 / p. 53-61 <https://doi.org/10.7220/2351-7409.3.5>

Industrial collaborative robot digital twin integration and control using robot operating system

Diachenko, Danyl; Partyshev, Andriy; Pizzagalli, Simone Luca; Bondarenko, Yevhen; Otto, Tauno; Kuts, Vladimir Journal of Machine Engineering 2022 / p. 57 - 67 <https://doi.org/10.36897/jme/148110> [Journal metrics at Scopus](#) [Article at Scopus](#)

Industrial robot training in the simulation using the machine learning agent

Nutonen, Karle; Kuts, Vladimir; Otto, Tauno Procedia computer science 2023 / p. 446-455 <https://doi.org/10.1016/j.procs.2022.12.240> [Conference Proceedings at Scopus](#) [Article at Scopus](#)

Interface development for digital twin of an electric motor based on empirical performance model

Rassõlkin, Anton; Rjabtšikov, Viktor; Kuts, Vladimir; Vaimann, Toomas; Kallaste, Ants; Asad, Bilal; Partyshev, Andriy IEEE Access 2022 / p. 15635-15643 <https://doi.org/10.1109/ACCESS.2022.3148708> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

ISEAUTO self-driving vehicle dynamic model verification

Rjabtšikov, Viktor; Ibrahim, Mahmoud; Kuts, Vladimir 2023 IEEE 17th International Conference on Compatibility, Power Electronics and Power Engineering (CPE-POWERENG) 2023 / 6 p <https://doi.org/10.1109/CPE-POWERENG58103.2023.10227396>

Novel digital twin concept for industrial application. Study case: propulsion drive system

Jegorov, Sergei; Rassõlkin, Anton; Rjabtšikov, Viktor; Ibrahim, Mahmoud; Kuts, Vladimir Proceedings of ASME 2022 International Mechanical Engineering Congress and Exposition (IMECE2022), 2B: Columbus, Ohio, USA, October 30 - November 3, 2022 2022 / art. IMECE2022-97243, V02BT02A011, 6 p. <https://doi.org/10.1115/IMECE2022-97243>

Novel digital twin development methodology for the robot cell connectivity in a smart industry environment = Uudne digitaalsete kaksikute arendusmetoodika robottootmisrakkude sidustamiseks targa tööstuse keskkonnas

Kuts, Vladimir 2019 <https://digi.lib.ttu.ee/i/?12252> Tehnikaülikooli doktoritöö tõhustas robotijuhtimist virtuaalkaksikuga

Online and blended laboratories for practical mechanical engineering

Stöhr, Christian; Olesen, Veronica; Sheikhi, Shahram; Langer, Robert; Kuts, Vladimir; Müür, Margus; Nousiainen, Antti; Putkonen, Ari The 19th international CDIO conference, Trondheim, Norway, 26-29 June 2023 : proceedings - full papers 2023 / p. 805-819 <http://www.cdio.org/knowledge-library/documents/online-and-blended-labs-practical-mechanical-engineering>

Optimisation of decision-making process in industrial robot selection

Kangru, Tavo; Riives, Jüri; Otto, Tauno; Kuts, Vladimir; Moor, Madis Journal of the machine engineering 2020 / p. 70-81 <https://doi.org/10.36897/jme/117788> [Journal metrics at scopus](#) [Article at Scopus](#)

Parametric digital twin of autonomous electric vehicle transmission

Rassõlkin, Anton; Rjabtšikov, Viktor; Kuts, Vladimir; Kudelina, Karolina; Vaimann, Toomas; Kallaste, Ants; Partyshev, Andriy Journal of machine engineering 2021 / p. 5-14 <https://doi.org/10.36897/jme/134435> [Journal metrics at Scopus](#) [Article at Scopus](#)

Pneumatics laboratory interactive educational experience development

Sandyk, Ivanna; Müür, Margus; Kuts, Vladimir; Bondarenko, Yevhen; Pizzagalli, Simone Luca; Rüttnann, Tiia The 19th international CDIO conference, Trondheim, Norway, 26-29 June 2023 : proceedings - full papers 2023 / p. 144-154 <http://www.cdio.org/knowledge-library/documents/pneumatics-laboratory-interactive-educational-experience-development>

Robot manipulator usage for measurement in production areas

Kuts, Vladimir; Tähemaa, Toivo; Otto, Tauno; Sarkans, Martinš; Lend, Henri Journal of machine engineering 2016 / p. 57-67 : ill http://www.not.pl/wydawnictwo/2016JOM/V1/6_KUTS.pdf

ROS middle-layer integration into Unity3D as an interface option for propulsion drive simulations of autonomous vehicles

Kuts, Vladimir; Rassõlkin, Anton; Jegorov, Sergei; Rjabtšikov, Viktor Proceedings of the Estonian Academy of Sciences 2021 / p. 392-398 : ill <https://doi.org/10.3176/proc.2021.4.04> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

ROS middle-layer integration to Unity 3D as an interface option for propulsion drive simulations of autonomous vehicles
Kuts, Vladimir; Rassõlkin, Anton; Partyshev, Andriy; Jegorov, Sergei; Rjabtšikov, Viktor IOP conference series : materials science and engineering 2021 / art. 012008, 7 p.:ill <https://doi.org/10.1088/1757-899X/1140/1/012008>

ROS-based Augmented and Virtual Reality path planning interface for industrial robotic arms: a preliminary assessment
Pizzagalli, Simone Luca; Bondarenko, Yevhen; Kuts, Vladimir; O'Connell, Eoin; Murray, Niall; Otto, Tauno 2023 IEEE International Conference on Computers and Automation (CompAuto 2023) 2023

SMA-based haptic gloves usage in the smart factory concept : XR use case
Srivastava, Rupal; Kuts, Vladimir; Souza Gouveia, E. L.; Murray, Niall; Devine, Declan; O'Connell, Eoin Proceedings of ASME 2022 International Mechanical Engineering Congress and Exposition (IMECE2022), 2B: Columbus, Ohio, USA, October 30 - November 3, 2022 2022 / art. IMECE2022-94305, V02BT02A017, 10 p <https://doi.org/10.1115/IMECE2022-94305>

Spatial representation of self-driving vehicle for virtual entity of digital twin
Rassõlkin, Anton; Maksimkins, Pavels; Stupans, Andrejs; Rjabtšikov, Viktor; Šenfelds, Armands; Kuts, Vladimir Computer 2024 / p. 58-66 <https://doi.org/10.1109/MC.2023.3319108>

Synchronizing physical factory and its digital twin through an IIoT middleware : a case study
Kuts, Vladimir; Modoni, Gianfranco E.; Otto, Tauno; Sacco, Marco; Tähemaa, Toivo; Bondarenko, Yevhen; Wang, Ruxin Proceedings of the Estonian Academy of Sciences 2019 / p. 364–370 : ill http://www.kirj.ee/32660/?tpl=1061&c_tpl=1064 <https://doi.org/10.3176/proc.2019.4.03> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Teleoperation of the industrial robot : augmented reality application
Chung, Xue Er Shamaine; Qiao, Yuansong; **Kuts, Vladimir; Henry, John; McNevin, Ken; Murray, Niall** MMSys '22: Proceedings of the 13th ACM Multimedia Systems Conference 2022 / p. 299–303 <https://doi.org/10.1145/3524273.3532901>

Unified interface for programming and control of industrial robots
Bondarenko, Yevhen; Pizzagalli, Simone Luca; Kuts, Vladimir; Otto, Tauno EuroXR 2023 : Proceedings of the 20th EuroXR International Conference 2023 / p. 182-185 <https://publications.vtt.fi/pdf/technology/2023/T422.pdf> <https://doi.org/10.32040/2242-122X.2023.T422>

Universal XR framework architecture based on open-source XR tools
Bondarenko, Yevhen; Kuts, Vladimir; Pizzagalli, Simone Luca; Nutonen, Karle; Murray, Niall; O'Connell, Eoin XR and metaverse : proceedings of the 8th international XR-metaverse conference 2023, Las Vegas, USA 2024 / p. 87-98 https://doi.org/10.1007/978-3-031-50559-1_7

Upper extremity movement evaluation using markerless motion capture system
Gavriljuk, Marietta; **Kuts, Vladimir; Gapeyeva, Helena; Otto, Tauno; Pizzagalli, Simone Luca** EuroVR 2020 Application, exhibition & demo track : proceedings of the virtual conference 2020 / p. 83-86 <https://doi.org/10.32040/2242-122X.2020.T381>

User-centered design for Human-Robot Collaboration systems
Pizzagalli, Simone Luca; Kuts, Vladimir; Otto, Tauno IOP conference series : materials science and engineering 2021 / art. 012011, 7 p.: ill <https://doi.org/10.1088/1757-899X/1140/1/012011>

User-centred design in industrial collaborative automated systems
Pizzagalli, Simone Luca; Kuts, Vladimir; Otto, Tauno Proceedings of the Estonian Academy of Sciences 2021 / p. 436-443 : ill <https://doi.org/10.3176/proc.2021.4.10> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Virtuaalreaalsuse olevik ja tulevik
Otto, Tauno; Kuts, Vladimir Mente et Manu 2019 / lk. 26-27 : fot https://www.ttu.ee/public/m/mente-et-manu/MM_05_2019/mobile/index.html https://www.ester.ee/record=b1242496*est

Virtual labs for higher education in industrial engineering
Terkaj, Walter; Kleine, Kari; **Kuts, Vladimir** Proceedings of the Estonian Academy of Sciences 2024

Virtual simulations environment development for autonomous vehicles interaction
Malayjerdi, Mohsen; Kuts, Vladimir; Sell, Raivo; Otto, Tauno; Baykara, Baris Cem ASME 2020 : International Mechanical Engineering Congress and Exposition, November 16–19, 2020 : Virtual, Online : proceedings 2020 / Paper No: IMECE2020-23362, V02BT02A009; 5 p <https://doi.org/10.1115/IMECE2020-23362>