

ARVR Digital Twin for simulation and data collection of robotic environments

Martins, João G.; **Nutonen, Karle**; Costa, Paulo; **Kuts, Vladimir**; **Otto, Tauno**; Sousa, Armando; Petry, Marcelo R. 2025 IEEE International Conference on Autonomous Robot Systems and Competitions (ICARSC) 2025 / 6 p
<https://doi.org/10.1109/ICARSC65809.2025.10970158>

Autonomous vehicle for industry 5.0 : Digital twin for system safety validation

Sell, Raivo; **Malayjerd, Mohsen**; Malayjerd, Ehsan; **Bellone, Mauro**; **Pikner, Heiko** Proceedings of the 11th International Conference on Vehicle Technology and Intelligent Transport Systems VEHITS ; Vol. 1 2025 / p. 660-667
<https://doi.org/10.5220/0013476600003941>

CCD IK implementatsion in unity for finding the angles of industrial robots' links

Nutonen, Karle; **Kuts, Vladimir**; **Otto, Tauno** ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE) ; vol. 2 2024 / art. IMECE2024-142320, V002T03A072 ; 5 p. <https://doi.org/10.1115/IMECE2024-142320>

A comprehensive survey on digital twin for future networks and emerging Internet of Things industry

Hakiri, Akram; Gokhale, Aniruddha; **Ben Yahia, Sadok**; Mellouli, Nedra Computer Networks 2024 / art. 110350
<https://doi.org/10.1016/j.comnet.2024.110350> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Conceptual framework of information flow synchronization throughout the building lifecycle

Raitviir, Christopher-Robin; **Lill, Irene** Buildings 2024 / art. 2207 <https://doi.org/10.3390/buildings14072207> [Journal metrics at Scopus](#)
[Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Construction with digital twin information systems

Sacks, Rafael; Brilakis, Ioannis; **Pikas, Ergo**; Xie, Haiyan Sally; Girolami, Mark Data-centric engineering 2020 / art. e14, 26 p
<https://doi.org/10.1017/dce.2020.16>

Creation of digital twin models for renovation: an integrative literature review

Löhmus, Daniel; **Pikas, Ergo** Proceedings of the 2023 European Conference on Computing in Construction and the 40th International CIB W78 Conference 2023 / art. 303649 <https://doi.org/10.35490/EC3.2023.307>

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 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 for controlled generation of water-in-oil microdroplets with required size

Gyimah, Nafisat; **Scheler, Ott**; **Rang, Toomas**; Pardy, Tamas 2022 23rd International Conference on Thermal, Mechanical and Multi-Physics Simulation and Experiments in Microelectronics and Microsystems (EuroSimE), 25-27 April 2022, St Julian, Malta : proceedings 2022 / p. 85-91 <https://doi.org/10.1109/EuroSimE54907.2022.9758876>

Digital twin of wind generator for modelling various turbine characteristics

Raja, Hadi Ashraf; **Autsou, Siarhei**; **Kudelina, Karolina**; **Rjabtšikov, Viktor**; **Vaimann, Toomas**; **Kallaste, Ants**; Pomarnacki, Raimondas; Hyunh, Van Khang 2023 International Conference on Electrical Drives and Power Electronics (EDPE) 2023 / p. 1-5
<https://doi.org/10.1109/EDPE58625.2023.10274050>

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

Rjabtšikov, Viktor; **Mohamed, Mahmoud Ibrahim Hassanin**; **Asad, Bilal**; **Rassölkin, Anton**; **Vaimann, Toomas**; **Kallaste, Ants**; **Kuts, Vladimir**; Stepień, 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 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>

Digital twins for cities and regions : global challenges, regional initiatives, European approaches

Kern, Leyla; **Dembski, Fabian**; Wössner, Uwe EU Conference on modelling for policy support, 22-26 November 2021, Brussels : Abstracts 2021 / p. 51-54 https://knowledge4policy.ec.europa.eu/sites/default/files/2021_EU_CONF_MOD_Booklet_of_abstracts.pdf

Digital twins for designing energy management systems for microgrids: Implementation example based on TalTech Campulse project

Korõtko, Tarmo; **Zahraoui, Younes**; **Rosin, Argo**; **Agabus, Hannes** 2023 IEEE 17th International Conference on Compatibility,

Digital twins in extended reality for control system applications

Jeršov, Stanislav; Tepljakov, Aleksei 2020 43rd International Conference on Telecommunications and Signal Processing : TSP 2020, Milan, Italy, July 7-9, 2020 2020 / art. 162353, p. 274-279 <https://doi.org/10.1109/TSP49548.2020.9163557>

Emerging role of industry 5.0 digital twins in demand response electricity market and applications

Onile, Abiodun Emmanuel; Belikov, Juri; Petlenkov, Eduard; Levron, Yoash IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT Europe 2023) : proceedings 2023 / 6 p <https://doi.org/10.1109/ISGTEUROPE56780.2023.10407322>

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>

An EV-traction inverter data-driven modelling for digital twin development

Ibrahim, Akram Abdalla Mohammed; Raja, Hadi Ashraf; Rassölkin, Anton; Vaimann, Toomas; Kallaste, Ants 2023 23rd International Scientific Conference on Electric Power Engineering (EPE) 2023 / 5 p. : ill <https://doi.org/10.1109/EPE58302.2023.10149230>

Green, digital, inclusive : new directions in urban and regional planning

Dembski, Fabian; Linzer, Helena; Voigt, Andreas; Wieshofer, Isabel AESOP annual congress space for species : redefining spatial justice - book of abstracts 2022 / p. 432-433 <https://proceedings.aesop-planning.eu/index.php/aesopro/issue/view/13/13>

Identification and characterization of modulation scheme in an EV-PMSM control strategy for digital twin modeling

Mohamed, Mahmoud Ibrahim Hassanin; Rassölkin, Anton; Vaimann, Toomas; Kallaste, Ants Diagnostika 2024 - 2024 International Conference on Diagnostics in Electrical Engineering, Proceedings 2024 / 5 p <https://doi.org/10.1109/Diagnostika61830.2024.10693927>

Implementing an AI-based digital twin analysis system for real-time decision support in a custom-made sportswear SME

Raamets, Tõnis; Karjust, Kristo; Majak, Jüri; Hermaste, Aigar Applied sciences 2025 / art. 7952 <https://doi.org/10.3390/app15147952>

Implementing digital twin technology of the earth system in Destination Earth

Wedi, Nils; Sandu, Irina; Bauer, Peter; Acosta, Mario; Andersen, Rune Carbuhn; Andrae, Ulf; Auger, Ludovic; Balsamo, Gianpaolo; **Baousis, Vasileios;** Bennett, Victoria; **Maljutenko, Ilja** Journal of the European Meteorological Society 2025 / art. 100015 <https://doi.org/10.1016/j.jemets.2025.100015> <https://www.sciencedirect.com/science/article/pii/S2950630125000092>

Integration of digital twins into virtual commissioning practices

Guerra Zubiaga, David; Richards, Gersom; Forsberg, Paul; Nwachukwu, Kingsley; Burroughs, Andrew; Sabula, Eric; **Kuts, Vladimir** ASME International Mechanical Engineering Congress and Exposition, Proceedings (IMECE) ; vol. 2 2024 / art. IMECE2024-145598, V002T03A076 ; 9 p <https://doi.org/10.1115/IMECE2024-145598>

Knowledge-driven based performance analysis of robotic manufacturing cell for design improvement

Kangru, Tavo; Mahmood, Kashif; Otto, Tauno; Moor, Madis; **Riives, Jüri** ASME 2020 : International Mechanical Engineering Congress and Exposition, November 16–19, 2020 : Virtual, Online : proceedings 2020 / Paper No: IMECE2020-23541, V006T06A032 ; 8 p <https://doi.org/10.1115/IMECE2020-23541>

Leveraging digital twins and demand side recommender Chatbot for optimizing smart grid energy efficiency

Onile, Abiodun Emmanuel; Belikov, Juri; Petlenkov, Eduard; Levron, Yoash 2023 IEEE PES Innovative Smart Grid Technologies - Asia, ISGT Asia 2023 2023 / 5 p <https://doi.org/10.1109/ISGTAsia54891.2023.10372761>

Model-based service provisioning in optical networks

Karunakaran, Vignesh; Müller, Jasper; Slyne, Frank; **Kaeval, Kaida;** Troia, Sebastian; Autenrieth, Achim; Kilper, Daniel C.; Bauschert, Thomas; Ruffini, Marco ECOC 2023 : 49th European Conference on Optical Communications, 1-5 October 2023 2024 / p. 1039-1042 <https://doi.org/10.1049/icp.2023.2429> <https://digital-library.theiet.org/docserver/fulltext/cp839/ICP.2023.2429.pdf?expires=1727158709&id=id&accname=guest&checksum=7B52C0279E1600FDE3FC6BECEED8CE4F> [Conference Proceedings at Scopus Article at Scopus](#)

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

Jegorov, Sergei; Rassölkin, Anton; Rjabtšikov, Viktor; Mohamed, Mahmoud Ibrahim Hassanin; 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>

Physics based compressive sensing to enable digital twins of additive manufacturing processes

Lu, Yanglong; **Ševtšenko, Eduard;** Wang, Yan Journal of computing and information science in engineering 2021 / 031009, 30 p

<https://doi.org/10.1115/1.4050377> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Relmagine lab : bridging the gap between hands-on, virtual and remote control engineering laboratories using digital twins and extended reality

Alsaleh, Saleh Ragheb Saleh; Tepļakov, Aleksej; Köse, Ahmet; Belikov, Juri; Petlenkov, Eduard IEEE Access 2022 / p. 89924-889943 : ill <https://doi.org/10.1109/ACCESS.2022.3199371> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Reverse engineering-based modeling of an EV motor drive for digital twin development

Mohamed, Mahmoud Ibrahim Hassanin; Rassõlkin, Anton; Rjabtšikov, Viktor 2024 IEEE International Conference on Electrical Systems for Aircraft, Railway, Ship Propulsion and Road Vehicles and International Transportation Electrification Conference, ESARS-ITEC 2024 2025 / 5 p <https://doi.org/10.1109/ESARS-ITEC60450.2024.10819839>

Review of electric vehicle testing procedures for digital twin development : a comprehensive analysis

Rjabtšikov, Viktor; Rassõlkin, Anton; Kudelina, Karolina; Kallaste, Ants; Vaimann, Toomas Energies 2023 / art. 6952 <https://doi.org/10.3390/en16196952> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Robust design optimization and emerging technologies for electrical machines: challenges and open problems

Orosz, Tamas; **Rassõlkin, Anton; Kallaste, Ants**; Arsenio, Pedro; Panek, David; Kaska, Jan; Karban, Pavel Applied sciences 2020 / art. 6653, 33 p. : ill <https://doi.org/10.3390/app10196653> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

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](#)

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>

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](#)

Uses of the digital twins concept for energy services, intelligent recommendation systems, and demand side management : a review

Onile, Abiodun Emmanuel; Machlev, Ram; **Petlenkov, Eduard**; Levron, Yoash; **Belikov, Juri** Energy reports 2021 / p. 997-1015 <https://doi.org/10.1016/j.egy.2021.01.090> [Journal metrics at Scopus](#) [Article at Scopus](#) [Journal metrics at WOS](#) [Article at WOS](#)

Varying data on urban trees complicates meeting user needs for digital twins of urban green infrastructure

Fabritius, Eeva Henna Helena; Tuulik, Tiina; Kupper, Kristiina; Mrosla, Laura; Nummi, Pilvi; Prilenska, Viktorija; Yao, Chaowen The 18th International Conference on Computational Urban Planning and Urban Management 2023 / 14 p <https://doi.org/10.17605/OSF.IO/6YR5V> <https://osf.io/ahzds>

What grows, adapts and lives in the digital sphere? Systematic literature review on the dynamic modelling of flora and fauna in digital twins

Mrosla, Laura; Fabritius, Eeva Henna Helena; Kupper, Kristiina; Dembski, Fabian; Fricker, Pia Ecological modelling 2025 / art. 111091 <https://doi.org/10.1016/j.ecolmodel.2025.111091>

Virtual reality simulators for inclusion and participation : broadening perspectives on accessible cities and public space

Kern, Leyla; **Dembski, Fabian**; Obst, Thomas; Bisinger, Laura; Falk, Benedict; Wössner, Uwe Mobility, Knowledge and Innovation Hubs in Urban and Regional Development : proceedings of REAL CORP 2022, 27th International Conference on Urban Development, Regional Planning and Information Society 2022 / p. 1025-1031 <https://doi.org/10.48494/REALCORP2022.2039>