

IOSUD - UNIVERSITATEA „DUNĂREA DE JOS” DIN GALAȚI

Memoriul științific al studentului doctorand

MEMORIU ȘTIINȚIFIC

Drd. Ing. Dan IONESCU

Studii de doctorat

Perioada: **01.10.2020 - 30.07.2025**

Conducător științific: **Prof. univ. dr. ing. Adrian FILIPESCU**

Domeniul de doctorat: **Ingineria Sistemelor / Automatică și Robotică**

Titlul tezei de doctorat: **IoT Cloud Control of Manufacturing Technologies on Multifunctional Mechatronics Lines with Integrated Robotic Systems using Digital Twin Methods**

Activitate științifică

A. Lista de lucrări științifice (articole în reviste sau volume)

1. **Ionescu, D.**; Filipescu, A.; Simion, G.; Filipescu, A. Internet of Things-Cloud Control of a Robotic Cell Based on Inverse Kinematics, Hardware-in-the-Loop, Digital Twin, and Industry 4.0/5.0. *Sensors* 2025, 25, 1821, WOS:001453930500001, ISSN:1424-8220, <https://doi.org/10.3390/s25061821>
2. **Ionescu, D.**; Filipescu, A.; Simion, G.; Mincă, E.; Cernega, D.; Șolea, R.; Filipescu, A. Communication and Control of an Assembly, Disassembly and Repair Flexible Manufacturing Technology on a Mechatronics Line Assisted by an Autonomous Robotic System. *Inventions* 2022, 7, 43, WOS:000818151300001, ISSN:2411-5134, <https://doi.org/10.3390/inventions7020043>
3. Filipescu, A.; Simion, G.; Ionescu, D.; Filipescu, A. IoT-Cloud, VPN, and Digital Twin-Based Remote Monitoring and Control of a Multifunctional Robotic Cell in the Context of AI, Industry, and Education 4.0 and 5.0. *Sensors* 2024, 24, 7451, WOS:001377771600001, ISSN:1424-8220, <https://doi.org/10.3390/s24237451>
4. Simion, G.; Filipescu, A.; **Ionescu, D.**; Filipescu, A. Cloud/VPN-Based Remote Control of a Modular Production System Assisted by a Mobile Cyber-Physical Robotic System - Digital Twin Approach. *Sensors* 2025, 25, 591, WOS:001405432100001, ISSN:1424-8220, <https://doi.org/10.3390/s25020591>
5. Mincă, E.; Filipescu, A.; Cernega, D.; Șolea, R.; Filipescu, A.; **Ionescu, D.**; Simion, G. Digital Twin for a Multifunctional Technology of Flexible Assembly on a Mechatronics Line with Integrated Robotic Systems and Mobile Visual Sensor - Challenges towards Industry 5.0. *Sensors* 2022, 22, 8153, WOS:000881435200001, ISSN:1424-8220, <https://doi.org/10.3390/s22218153>
6. Simion, G.; Filipescu, A.; **Ionescu, D.**; Șolea, R.; Cernega, D.; Mincă, E.; Filipescu, A. Mobile Visual Servoing Based Control of a Complex Autonomous System Assisting a Manufacturing Technology on a Mechatronics Line. *Inventions* 2022, 7, 47, WOS:000858232500001, ISSN:2411-5134, <https://doi.org/10.3390/inventions7030047>
7. Filipescu, A.; **Ionescu, D.**; Filipescu, A.; Mincă, E.; Simion, G. Multifunctional Technology of Flexible Manufacturing on a Mechatronics Line with IRM and CAS, Ready for Industry 4.0. *Processes* 2021, 9, 864, WOS:000654500500001, ISSN:2227-9717, <https://doi.org/10.3390/pr9050864>
8. **D. Ionescu**, A. Filipescu, G. Simion, R. Șolea, A. Filipescu and A. Serbencu, "PLC Inverse Kinematics Model-Driven Digital Twin Focused on HIL for a Flexible Robotic Cell," 2024 18th International Conference on Control, Automation, Robotics and Vision (ICARCV), Dubai, United



Arab Emirates, 2024, pp. 1195-1200, WOS:001435120000191, ISSN:2474-2953,
<https://doi.org/10.1109/icarcv63323.2024.10821631>

9. A. Filipescu, I. Stamatescu, G. Simion, **D. Ionescu** and A. Filipescu, "IoT-Cloud based Control of a Flexible Assembly/Disassembly Mechatronic System in the Framework of Industries 4.0 and 5.0," 2024 IEEE 18th International Conference on Control & Automation (ICCA), Reykjavík, Iceland, 2024, pp. 534-539, WOS:001294388500088, ISSN:1948-3449,
<https://doi.org/10.1109/icca62789.2024.10591866>
10. A. Filipescu, G. Simion, **D. Ionescu** and A. Filipescu, "Remote Control of a Flexible Robotic Cell as a Cyber Physical System for Assembly and Disassembly Based on SCADA and Industry 4.0," 2024 32nd Mediterranean Conference on Control and Automation (MED), Chania - Crete, Greece, 2024, pp. 634-639, ISSN:2473-3504, <https://doi.org/10.1109/med61351.2024.10566234>
11. A. Filipescu, E. Minca, D. Cernega, R. Solea, A. Filipescu, G. Simion and **D. Ionescu**, "Digital Twin Based a Processing Technology Assisted by a MCPRS, Ready for Industry 5.0," 2023 27th International Conference on System Theory, Control and Computing (ICSTCC), Timisoara, Romania, 2023, pp. 297-302, ISSN:2473-5698, <https://doi.org/10.1109/icstcc59206.2023.10308478>
12. A. Filipescu, D. Cernega, R. Solea, A. Filipescu, E. Minca, **D. Ionescu** and G. Simion, "Modeling and Control an A/DT Served by an ACPs based on SCADA, Industry 4.0 and 5.0," 2023 IEEE 28th International Conference on Emerging Technologies and Factory Automation (ETFA), Sinaia, Romania, 2023, pp. 1-8, ISSN:1946-0759, <https://doi.org/10.1109/etfa54631.2023.10275349>
13. A. Filipescu, R. Șolea, D. C. Cernega, **D. Ionescu**, G. Simion and A. Filipescu, "Complex Autonomous System Assisting a Manufacturing Technology on a Mechatronics Line. A Digital Twin Approach," 2022 26th International Conference on System Theory, Control and Computing (ICSTCC), Sinaia, Romania, 2022, pp. 157-162, WOS: 000889980600028, ISSN:2372-1618,
<https://doi.org/10.1109/icstcc55426.2022.9931812>
14. A. Filipescu, D. C. Cernega, E. Minca, R. Șolea, **D. Ionescu** and G. Simion, "Digital Twin for a Mechatronics Line with Integrated Mobile Robotic Systems," 2022 26th International Conference on System Theory, Control and Computing (ICSTCC), Sinaia, Romania, 2022, pp. 163-169, WOS:000889980600029, ISSN:2372-1618, <https://doi.org/10.1109/icstcc55426.2022.9931782>
15. **D. Ionescu**, D. Cernega, R. Șolea, A. Filipescu, G. Simion and A. Filipescu, "CAS and IRM Integrated into a Multifunctional Flexible Manufacturing Technology on an A/D/RML," 2021 25th International Conference on System Theory, Control and Computing (ICSTCC), Iasi, Romania, 2021, pp. 541-546, WOS:000859487900089, ISSN:2372-1618,
<https://doi.org/10.1109/icstcc52150.2021.9607127>
16. **D. Ionescu**, "Trajectory - Tracking Cascade Control of a Nonholonomic WMR based on Kinematic and Dynamic Model, " 2019 6th International Symposium on Electrical and Electronics Engineering (ISEEE), Galati, Romania, 2019, 9, ISBN:978-1-7281-2906-8/19/\$31.00 ©2019 IEEE.
17. **Ionescu, D.**; Filipescu, A.; Simion, G.; Filipescu, A., "Internet of Things-Cloud Control of a Robotic Cell Based on Inverse Kinematics, Hardware-in-the-Loop, Digital Twin, and Industry 4.0/5.0, " Sensors 2025, 25, 1821, <https://doi.org/10.20944/preprints202502.0693.v1>
18. Simion, G.; Filipescu, A.; **Ionescu, D.**; Filipescu, A., "Cloud/VPN Based Remote Control of a Modular Production System Assisted by a Mobile Cyber Physical Robotic System—Digital Twin Approach, " Sensors 2025, 25, 591, <https://doi.org/10.20944/preprints202412.0302.v1>
19. Filipescu, A.; Simion, G.; **Ionescu, D.**; Filipescu, A., "IoT-Cloud, VPN, and Digital Twin-Based Remote Monitoring and Control of a Multifunctional Robotic Cell in the Context of AI, Industry, and Education 4.0 and 5.0, " Sensors 2024, 24, 7451,
<https://doi.org/10.20944/preprints202410.1345.v1>



B. Participări la conferințe/workshop-uri

1. 2024 18th International Conference on Control, Automation, Robotics and Vision (ICARCV), Dubai, United Arab Emirates, 2024;
2. 2023 IEEE 28th International Conference on Emerging Technologies and Factory Automation (ETFA), Sinaia, Romania, 2023;
3. 2022 26th International Conference on System Theory, Control and Computing (ICSTCC), Sinaia, Romania, 2022;
4. 2019 6th International Symposium on Electrical and Electronics Engineering (ISEEE), Galati, Romania, 2019;

C. Proiecte de cercetare științifică

1. **Asistent de cercetare în automatică**, 01.12.2018-31.08.2022, membru în echipa proiectului complex “Conducerea inteligentă și distribuită a 3 sisteme autonome complexe integrate în tehnologii emergente către asistare personală medico-socială și deservire de linii de fabricație flexibilă de precizie”, cod proiect PN-III-P1-1.2-PCCDI-2017-0290, finanțat prin contractul nr.78PCCDI/2018.

D. Stagii de perfecționare

1. Stagiul de pregătire tineri cercetători: „Proiectarea modelului funcțional al unui sistem de control video localizat pe un sistem robot integrat pentru o linie de asamblare/dezasamblare flexibilă”, 2020, Universitatea Națională de Știință și Tehnologie Politehnica București și Asti Automation, București.

