

# RAPORT ACTIVITATE <sup>1</sup>

pe anul 2024

## 1. Datele de identificare ale unității de cercetare (UC)

1.1. Denumirea UC<sup>2</sup>: **Sisteme de conducere automată a proceselor (SCAP)**

1.2. Document de înființare și anul de înființare<sup>3</sup>: **Certificat de înființare acordat de CNCIS nr. 35/CC-C 2001**

1.3. Adresa UC: **Universitatea „Dunărea de Jos” din Galați, Facultatea Automatică, Calculatoare, Inginerie Electrică și Electronică, Galați, Str. Științei nr.2 corp Y sala Y604**

1.4. Telefon, fax, pagina web, e-mail: 0336130298, fax 0336130299, e-mail: daniela.cernega@ugal.ro

## 2. Scurtă prezentare

2.1. Domeniul fundamental/ramura de știință<sup>4</sup>: **Științe ingineresti/Ingineria Sistemelor**

2.2. Directii de cercetare-dezvoltare/obiective de cercetare/priorități de cercetare

- a. Conducerea proceselor neliniare (modelarea, estimarea stării și controlul proceselor de tratare biologică a apelor reziduale, conducerea roboților mobili și a sistemelor flexibile de fabricație);
- b. Optimizări discrete (Conducerea și optimizarea proceselor continue și cu evenimente discrete).

## 3. Structura de conducere a UC

3.1. Coordonator (Director/Responsabil) **Conf.dr.ing Daniela Cristina CERNEGA**

3.2. Consiliul de conducere/științific **Prof.dr.ing. Sergiu CARAMAN, Prof.dr.ing. Marian BARBU**

## 4. Structura resursei umane

**Numărul total de membri, din care: (a+b)=18**

- a. Număr membri titulari <sup>5</sup> : 18 : Daniela Cristina CERNEGA, Sergiu CARAMAN, Viorel MÎNZU, Adrian FILIPESCU, Marian BARBU, Răzvan ȘOLEA, George IFRIM, Adrian ȘERBENCU, Bogdan CODREȘ, Laurențiu LUCA, Adriana FILIPESCU, Larisa DIACONU, Iulian VASILIEV, Dan IONESCU, Georgian SIMION, Liliana GHINEA, Bogdan ROSU, Ira Adeline SIMIONOV

Număr membri asociați: din care:0

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<sup>1</sup> La Raportare se va avea în vedere doar activitatea desfășurată de membrii titulari (Mt) ai UC

<sup>2</sup> Inclusiv acronim.

<sup>3</sup> Se specifică numărul Hotărârii de Senat și data aprobării

<sup>4</sup> În acord cu HOTĂRÂREA Nr. 433/2022 privind aprobarea Nomenclatorului domeniilor și al specializărilor/programelor de studii universitare și a structurii instituțiilor de învățământ superior pentru anul universitar 2022-2023

<sup>5</sup> Numai pe baza adeziunii aprobate de Responsabilul UC

- b. Conducători de doctorat<sup>6</sup>: 4 conform tabelului 4.1
- c. Număr de tineri cercetatori (postdoctoranzi, doctoranzi, masteranzi etc): 14
- d. Număr ingineri/tehnicieni: 0

## 5. Infrastructura de cercetare-dezvoltare, facilități de cercetare

5.1. Laboratoare/ compartimente<sup>7</sup>: 5.1. Laboratoare/compartimente<sup>8</sup>:2, conform Tabel 5.1

5.2. Echipamente, instalații și software de interes național pentru cercetare fundamentală, dezvoltare tehnologică și inovare<sup>9</sup>:-conform cu Tabelul 5.2

## 6. Contracte de cercetare derulate<sup>10</sup>

6.1. Contracte câștigate în competiții:

- internaționale:
- naționale:

6.2. Contracte cu agenți economici:

- din străinătate:
- din țară:

## 7. Finanțarea UC din fonduri proprii UDJG<sup>11</sup>

## 8. Rezultatele activității de cercetare, dezvoltare și inovare (CDI)

8.1.Rezultate ale activității CDI (cercetare fundamentală și aplicativă)<sup>12</sup>

|       |                                                                                                  | Nr.   |
|-------|--------------------------------------------------------------------------------------------------|-------|
| 8.1.1 | Lucrări publicate în reviste cotate ISI                                                          | 5     |
| 8.1.2 | Factor de impact cumulat al lucrărilor cotate ISI                                                | 13.53 |
| 8.1.3 | Citări în reviste de specialitate cotate ISI                                                     | 119   |
| 8.1.4 | Lucrări științifice/tehnice în reviste indexate în baze de date internaționale                   | 2     |
| 8.1.5 | Comunicări științifice prezentate la conferințe internaționale și publicate în volumele acestora | 10    |

<sup>6</sup> Nume, prenume, domeniul de doctorat.

<sup>7</sup> Se vor nominaliza laboratoarele, responsabilul și principale direcțiile de cercetare.

<sup>8</sup> Se vor nominaliza laboratoarele, responsabilul și principale direcțiile de cercetare; în cazul laboratoarelor, se vor nominaliza compartimentele/colectivele de cercetare,

<sup>9</sup> Se vor enumera numai acele laboratoare și acele echipamente care au fost folosite în activitatea de cercetare din ultimii 2 ani); Se vor nominaliza 1-2 repere reprezentative la nivel de universitate, regional și național.

<sup>10</sup> Se vor atașa liste pe categorii care să cuprindă următoarele detalii: nr. contract, titlu, domeniul (care se înscrie în lista domeniilor de cercetare declarate ale UC) de cercetare, director, parteneri (daca este cazul), valoare totală și valoarea regie și valoarea din regie care a fost solicitată pentru întreținerea UC.

<sup>11</sup> Se va specifica valoarea finanțarilor și destinația acestora.

<sup>12</sup> Se vor anexa lista acestor contribuții.

|               |                                                                                                                                                        |   |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>8.1.6</b>  | Comunicări științifice prezentate la conferințe naționale și publicate în volumele acestora                                                            | 8 |
| <b>8.1.7</b>  | Brevete de invenție (solicitate / acordate)                                                                                                            | 1 |
| <b>8.1.8</b>  | Citări în sistemul ISI ale lucrărilor de cercetare/ brevete                                                                                            |   |
| <b>8.1.9</b>  | Produse/servicii/tehnologii rezultate din activități de cercetare, bazate pe brevete, omologări sau inovații proprii.                                  |   |
| <b>8.1.10</b> | Studii prospective și tehnologice, normative, proceduri, metodologii și planuri tehnice, noi sau perfecționate, comandate sau utilizate de beneficiar. |   |

## 8.2. Teze de doctorat finalizate și în derulare<sup>13</sup>

### Teze de doctorat finalizate și în derulare

| Nr.crt. | Titlul tezei de doctorat                                                                    | Finalizat/ în derulare      | Domeniul de doctorat | Numele și prenumele doctorandului+ | Numele și prenumele conducătorului de doctorat |
|---------|---------------------------------------------------------------------------------------------|-----------------------------|----------------------|------------------------------------|------------------------------------------------|
| 1.      |                                                                                             |                             |                      |                                    |                                                |
| 2.      | Contribuții privind modelarea și conducerea automată a proceselor de tratare a apelor uzate | Susținută în decembrie 2024 | Ingineria Sistemelor | Bogdan ROSU                        | Prof.hab.dr.ing. Marian BARBU                  |
| 3.      | Conducerea automată avansată a proceselor complexe                                          | Sustinută în aprilie 2024   | Ingineria Sistemelor | Liliana Ghinea                     | Prof.hab.dr.ing. Marian BARBU                  |
| 4       | <i>Contribuții privind modelarea și conducerea automată a bioproceselor</i>                 | în derulare                 | Ingineria Sistemelor | Ira Adeline Simionov               | Prof.hab.dr.ing. Marian BARBU                  |
| 5       | Modelarea și conducerea tehnologiilor de fabricație pe linii                                | în derulare                 | Ingineria Sistemelor | Dan IONESCU                        | Prof.dr.ing. Adrian FILIPESCU                  |

<sup>13</sup> Se va anexa lista tezelor de doctorat în derulare, cu specificarea titlului, domeniul de doctorat, nume doctorand, nume conducator de doctorat.

|   |                                                                                                                                          |                                                                                                                                                                          |                      |                 |                               |
|---|------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------|-------------------------------|
|   | de mecatronică multifuncțională cu sisteme robotice integrate                                                                            |                                                                                                                                                                          |                      |                 |                               |
| 6 | Contributii la integrarea sistemelor servoing vizuale in linii de fabricație flexibila de precizie asistate de sisteme robotice autonome | în derulare                                                                                                                                                              | Ingineria Sistemelor | Georgian SIMION | Prof.dr.ing. Adrian FILIPESCU |
| 7 | Optimal control of an integrating system consisting of a sewer network and a wastewater treatment plant                                  | Teza de doctorat <b>sustinuta in septembrie 2024</b> in cotutela cu Dept. de Telecomunicació i Enginyeria de Sistemes Escola d'Enginyeria, Univesitat Autonoma Barcelona | Ingineria Sistemelor | Iulian VASILIEV | Prof.dr.ing . Sergiu CARAMAN  |

8.3. Oportunități de valorificare a rezultatelor CDI

8.4. Rezultate ale activității CDI valorificate și efectele obținute

## 9. Măsuri privind creșterea capacității activității CDI

## 10. Măsuri pentru creșterea prestigiului și a vizibilității UC<sup>14</sup>

10.1. Dezvoltarea de parteneriate:

- dezvoltarea de parteneriate la nivel național și internațional (cu personalități/instituții / asociații profesionale) în vederea participării la programele naționale și internaționale specifice;
- Dept. de Telecomunicació i Enginyeria de Sistemes  
Escola d'Enginyeria, Univesitat Autonoma Barcelona
- co-organizator Joint Conference ICSTCC 2024,

<sup>14</sup> Se va descrie detaliat fiecare acțiune realizată.

înscrierea UC în platforme naționale și internaționale care promovează parteneriatele; ERRIS

- înscrierea UC în rețele de cercetare/asociații profesionale de prestigiu pe plan național/internațional; ECC, CSS IEEE
- personalități științifice ce au vizitat UC; Prof. Ramon Vilanova Dept. de Telecomunicació i Enginyeria de Sistemes Escola d'Enginyeria, Univesitat Autonomia Barcelona , Decanul Facultatii Automatica Universitatea Barcelona
- asigurarea de stagii de cercetare pentru specialiști din țară și străinătate;
- cursuri și seminarii susținute de personalitățile științifice invitate;
- membrii în colective editoriale ale revistelor recunoscute ISI sau incluse în baze internaționale de date.

## 11.Concluzii

**Activitatea centrului de cercetare SCAP a asigurat vizibilitatea activitatii de cercetare din domeniul INGINERIA SISTEMELOR.**

Data:

5.05.2025

Responsabil/ Director UC  
Daniela Cristina CERNEGA



## ANEXE

**Tabel 4.1.**

### **Conducători de doctorat din cadrul UC**

| Nr.crt. | Nume și Prenume                 | Domeniul de doctorat |
|---------|---------------------------------|----------------------|
| 1       | Prof.dr.habil.ing. Marian BARBU | Ingineria Sistemelor |
| 2       | Prof.dr.ing. Sergiu CARAMAN     | Ingineria Sistemelor |
| 3       | Prof.dr.ing. Adrian FILIPESCU   | Ingineria Sistemelor |
| 4       | Prof.dr.ing. Viorel MÎNZU       | Ingineria Sistemelor |

**Tabel 5.1.**

### **Laboratoare/ compartimente ale UC**

| Nr.crt. | Denumire Laborator/<br>Compartiment UC                | Responsabil Laborator/<br>Compartiment | Direcții de cercetare                                                                          |
|---------|-------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|
| 1       | Sisteme de control a proceselor biotehnologice APEPUR | Conf.dr.ing. George IFRIM              | Conducerea proceselor biotehnologice din domeniile apelor uzate si fotobioreactoarelor         |
| 2       | Sisteme de control a proceselor neliniare SISCONTROL  | Conf.dr.ing. Răzvan ȘOLEA              | Conducerea sistemelor de roboti mobili si a sistemelor de flexibile de asamblare si fabricație |

**Tabel 5.2.**

**Echipamente, instalații și software de interes național pentru cercetare fundamentală, dezvoltare tehnologică și inovare – doar repere reprezentative la nivelul UC**

| Nr.crt. | Denumire echipament                                                                                   | Anul achiziției       |
|---------|-------------------------------------------------------------------------------------------------------|-----------------------|
| 1       | Celula flexibila de asamblare/dezasamblare echipata cu manipulator industrial ABB IRM                 | 2021                  |
| 2       | Linie de asamblare/dezasamblare Hera echipata cu senzori pentru IoT si conducere pentru Industrie 4.0 | 2008 actualizata 2023 |
| 3       | Fotobioreactor -                                                                                      | 2019                  |

### 6.1 Contracte/Granturi câștigate în competiții naționale/ internaționale

| Nr.crt. | Nr.contract                                                       | Titlu proiect                                                                       | Tip finanțare (național / internațional) | Domeniu l de cercetare | UDJG coordonator / partener | Director contract         | Perioada de derulare | Valoar ea contrac tului alocata UDJG |
|---------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------|------------------------|-----------------------------|---------------------------|----------------------|--------------------------------------|
| 1       | Proiectul nr. 621764- EPP-1-2020-1-NO-EPPKA2-KA                   | Digitalisation of water industry by innovative graduate water education / DIGIWATER | internațional                            |                        | partener                    | Prof.dr.ing. Marian BARBU | 2020-2024            |                                      |
| 2       | proiect CFIS, cod CNFIS-FDI-2 024-F- 0042, cu                     | Acces și integrare universitară pentru succes                                       | național                                 |                        | partener                    | Prof.dr.ing. Marian BARBU |                      |                                      |
| 3       | Proiect de cercetare contract de finanțare nr. RF2491/31.05 .2024 | Perspective internaționale și multidisciplinare asupra calității vieții”,           | national                                 |                        | coordonator                 | s.l.dr.ing Mugurel ENACHE |                      |                                      |

### 8.1.1 Articole în reviste cotate ISI

| Nr.crt. | Date de identificare articol<br>(Autori, Titlu, cod DOI articol, Titlul revistei, anul publicării)                                                                                                                                                                                                                                                                                                          | Factor de impact |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| 1.      | <a href="#">Integrated urban wastewater system operation: Performance evaluation and sewer network's operation implications</a><br>I Vasiliev, L Luca, M Barbu, R Vilanova, S Caraman, M Meneses Benitez<br>Water Science & Technology 90 (7), 2054-2069                                                                                                                                                    | 2.43             |
| 2.      | <a href="#">Convolutional Neural Network–Machine Learning Model: Hybrid Model for Meningioma Tumour and Healthy Brain Classification</a><br>S Moldovanu, G Tăbăcaru, M Barbu<br>Journal of Imaging 10 (9), 235                                                                                                                                                                                              | 2.7              |
| 3.      | <a href="#">3. Reducing the environmental impact of sewer network overflows using Model Predictive Control strategy</a><br>I Vasiliev, L Luca, M Barbu, R Vilanova, S Caraman<br>Water Resources Research 60 (1), e2023WR035448                                                                                                                                                                             | 4.6              |
| 4.      | Baicu LM, Andrei M, Ifrim GA, Dimitrievici LT. Embedded IoT Design for Bioreactor Sensor Integration. Sensors. 2024;24(20), 6587 - WOS:001341656800001                                                                                                                                                                                                                                                      | 3.4              |
| 5.      | Filipescu, Adrian; Simion, Georgian; Ionescu, Dan; Filipescu, Adriana, <a href="#">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</a> , Volume 24 Issue 23 eISSN:1424-8220, DOI 10.3390/s24237451, 2021 Impact factor: 3,4, ranked Q2, Instrument & Instrumentation, WOS: 001377771600001 | 3.4              |
| Total   |                                                                                                                                                                                                                                                                                                                                                                                                             | 13.53            |

### 8.1.3 Citări în reviste de specialitate cotate ISI.

#### 1. Articol citat

[Model Predictive Speed Control of Permanent Magnet Synchronous Motor](#)

<https://www.webofscience.com/wos/woscc/summary/7da483f3-2132-490b-8809-588bc35321d1-0143194536/date-descending/1>

Citat in :

PMSM Field-Oriented Control with Independent Speed and Flux Controllers for Continuous Operation under Open-Circuit Fault at Light Load Conditions - Ghanayem, H; Alathamneh, M and Nelms, RM - Feb 2024

ENERGIES 17 (3)

<https://www.mdpi.com/1996-1073/17/3/593>

#### 2. Articol citat

[Three-Dimensional Interest Point Detection and Description using Speeded-Up Robust Features and Histograms of Oriented Points](#)

<https://www.webofscience.com/wos/woscc/summary/feaf60c2-0124-4691-a8b6-f241f63bdd35-0143194438/date-descending/1>

Citat in:

Towards safe, efficient long-reach manipulation in nuclear decommissioning: a case study on fuel debris retrieval at Fukushima Daiichi - Zhang, KQ; Plianos, A; (...); Skilton, R - Jan 2 2025



JOURNAL OF NUCLEAR SCIENCE AND TECHNOLOGY 62 (1) , pp.1-16

3. Articol citat

**NONLINEAR SYSTEM IDENTIFICATION AND CONTROL BASED ON MODULAR NEURAL NETWORKS**

<https://www.webofscience.com/wos/woscc/summary/e2d6ceaa-bb88-4f65-ba9c-6a30fd027350-01431a2530/date-descending/1>

Citat in

. Optimising Hyperparameters of Artificial Neural Network Topology for SHM Damage Detection and Identification - Völtz, LR; Fogaça, MJ; (...); De Medeiros, R - Apr 2024

JOURNAL OF FAILURE ANALYSIS AND PREVENTION 24 (2) , pp.955-975

<https://link.springer.com/article/10.1007/s11668-024-01888-9>

4. Articol citat

**NONLINEAR SYSTEM IDENTIFICATION BASED ON INTERNAL RECURRENT NEURAL NETWORKS**

<https://www.worldscientific.com/doi/10.1142/S0129065709001884>

Citat in

Identification of nonlinear dynamical system based on adaptive radial basis function neural networks - Guo Luo, Hu Min and Zhi Yang - 17 May 2024 | **Neural Computing and Applications**, Vol. 36, No. 25

<https://link.springer.com/article/10.1007/s00521-024-09794-9>

5. Articol citat

**Guaranteed SLAM-A pure interval approach**

<https://scholar.google.com/scholar?oi=bibs&hl=ro&cites=17638782466693849945>

Citat in

5.1 Yang Song; Heng Yang; Liang Zhao; Shoudong Huang - Guaranteed 2D Pose Graph SLAM With Bounded Noises: An Efficient Interval Approach - IEEE Transactions on Automation Science and Engineering, Page(s): 1 – 12,

**DOI:** [10.1109/TASE.2024.3524373](https://doi.org/10.1109/TASE.2024.3524373)

<https://ieeexplore.ieee.org/abstract/document/10824936>

5.2 Marc Facerías; Vicenç Puig; and all - Distributed Set-based Localisation in Autonomous Vehicles - 2024 10th International Conference on Control, Decision and Information Technologies (CoDIT) - 01-04 July 2024,

**DOI:** [10.1109/CoDIT62066.2024.10708613](https://doi.org/10.1109/CoDIT62066.2024.10708613)

<https://ieeexplore.ieee.org/abstract/document/10708613>

6. 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

Minca, E; Filipescu, A; Cernega, D; **Solea, R**; Filipescu, A; Ionescu, D; Simion, G

Source: SENSORS Volume: 22 Issue: 21 Article Number: 8153 DOI: 10.3390/s22218153, 2022

**6.1** 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,

**Author(s):** Filipescu, A (Filipescu, Adrian); Simion, G (Simion, Georgian); Ionescu, D (Ionescu, Dan); Filipescu, A (Filipescu, Adriana), **Source:** SENSORS **Volume:** 24 **Issue:** 23 **Article**

**Number:** 7451 **DOI:** 10.3390/s24237451 **Published Date:** 2024 DEC , **Accession Number:** WOS:001377771600001

**6.2 Title:** Human-robot collaborative assembly and welding: A review and analysis of the state of the art

**Author(s):** Cao, Y (Cao, Yue); Zhou, Q (Zhou, Quan); Yuan, W (Yuan, Wei); Ye, Q (Ye, Qiang); Popa, D (Popa, Dan); Zhang, YM (Zhang, YuMing)

**Source:** JOURNAL OF MANUFACTURING PROCESSES **Volume:** 131 **Pages:** 1388-1403 **DOI:** 10.1016/j.jmapro.2024.09.044 **Early Access Date:** OCT 2024 **Published Date:** 2024 DEC 12

**Accession Number:** WOS:001334349200001

**6.3 Title:** Digital twin-based virtual commissioning for evaluation and validation of a reconfigurable process line

**Author(s):** Iyer, SV (Iyer, Suveg V.); Sangwan, KS (Sangwan, Kuldip Singh); Dhiraj (Dhiraj)

**Source:** IET COLLABORATIVE INTELLIGENT MANUFACTURING **Volume:** 6 **Issue:** 3 **Article Number:** e12111 **DOI:** 10.1049/cim2.12111 **Published Date:** 2024 SEP  
**Accession Number:** WOS:001274482200001

**6.4 Title:** State of the art and future directions of digital twin-enabled smart assembly automation in discrete manufacturing industries, **Author(s):** Webb, L (Webb, Louie); Tokhi, OM (Tokhi, Osman M.); Alkan, B (Alkan, Bugra), **Source:** INTERNATIONAL JOURNAL OF COMPUTER INTEGRATED MANUFACTURING **DOI:** 10.1080/0951192X.2024.2387775 **Early Access Date:** AUG 2024 **Published Date:** 2024 AUG 23

**6.5 Title:** How will the digital twin shape the future of industry 5.0?  
**Author(s):** Barata, J (Barata, Joao); Kayser, I (Kayser, Ina)  
**Source:** TECHNOVATION **Volume:** 134 **Article Number:** 103025 **DOI:** 10.1016/j.technovation.2024.103025 **Early Access Date:** MAY 2024 **Published Date:** 2024 JUN  
**Accession Number:** WOS:001238124200001

6.6 [Event-based control for discrete-time linear parameter-varying systems: an emulation-based design](#), [Moreira, JFVD](#); [da Silva, JG](#); (...); [Lacerda, MJ](#), [14th International Conference on Control \(CONTROL\)](#), 2024, 2024 UKACC 14TH INTERNATIONAL CONFERENCE ON CONTROL, CONTROL , pp.49-54

7. [Articol citat Super Twisting Sliding Mode Controller Applied to a Nonholonomic Mobile Robot](#), [Solea, R](#) and [Cernega, D](#)  
[Citat in](#)

7.1 [Sliding Mode Control for Robust Path Tracking of Automated Vehicles in Rural Environments](#)  
[Matute, J](#); [Diaz, S](#) and [Karimoddini, A](#), 2024, IEEE OPEN JOURNAL OF VEHICULAR TECHNOLOGY 5 , pp.1314-1325,

**8. Articol citat** [Communication and Control of an Assembly, Disassembly and Repair Flexible Manufacturing Technology on a Mechatronics Line Assisted by an Autonomous Robotic System](#), [Ionescu, D](#); [Filipescu, A](#); (...); [Filipescu, A](#), Jun 2022, INVENTIONS7 (2)  
[Citat in](#)

**8.1**

[Citat in](#)

8.1 [Integration of the GoFa collaborative robot with a linear track using PROFINET](#), [Borys, S](#) and [Kaczmarek, W](#), 2024, PRZEGLAD ELEKTROTECHNICZNYarrow\_drop\_down 100 (12) , pp.32-36

8.2 [In-Depth Review of Advanced Control Strategies and Cutting-Edge Trends in Robot Manipulators: Analyzing the Latest Developments and Techniques](#), [Abdelmaksoud, SI](#); [Al-Mola, MH](#); (...); [Asirvadam, VS](#), 2024, IEEE ACCESS arrow\_drop\_down 12 , pp.47672-47701

9. articol citat [Event-Based PID Control of a Flexible Manufacturing Process](#), [Duca, O](#); [Minca, E](#); [Cernega D](#), [Solea R](#); [Bidica, C](#), Dec 2022  
INVENTIONS 7(4)

Citat in

9.1 [H<sub>∞</sub> tracking control for de-oiling hydrocyclone systems via event-triggered reinforcement learning](#) Li, SB; Shan, RM; (...); Guan, XP, Aug 2024, JOURNAL OF THE FRANKLIN INSTITUTE-ENGINEERING AND APPLIED MATHEMATICS

9.2 [ADVANCED MULTI-OBJECTIVE ALGORITHM USED TO OPTIMIZE CONSUMPTION OF AN INTEGRATED SYSTEM FOR FLEXIBLE MANUFACTURING](#), Paun, MA; Coanda, HG; (...); Iliescu, SS, 2024, UNIVERSITY POLITEHNICA OF BUCHAREST SCIENTIFIC BULLETIN SERIES C-ELECTRICAL ENGINEERING AND COMPUTER SCIENCE 86 (2) , pp.113-12

9.3 [Optimal event-triggered control for wireless power transfer system in electric vehicles](#), Abdelrahim, M; Almakhlles, D and Mabrok, M, Jun 2024, ENERGY SCIENCE & ENGINEERINGarrow\_drop\_down 12 (6) , pp.2687-2701

10. Articol citat [Digital Twin for a Mechatronics Line with Integrated Mobile Robotic Systems](#) Filipescu, A; Cernega, DC; (...); Filipescu, A  
[26th International Conference on System Theory, Control and Computing \(ICSTCC\)](#)

Citat in

10.1 [State of the art and future directions of digital twin-enabled smart assembly automation in discrete manufacturing industries](#), Webb, L; Tokhi, OM and Alkan, B, Aug 2024 (Early Access), INTERNATIONAL JOURNAL OF COMPUTER INTEGRATED MANUFACTURING

10.2 [Digital Twins for Discrete Manufacturing Lines: A Review](#) Feng, XQ and Wan, JF, May 2024, BIG DATA AND COGNITIVE COMPUTING 8 (5)

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76. L. Luca, A. Pricopie, **I. Vasiliev**, M. Barbu și S. Caraman, "Fuzzy-Optimal Control Strategies for a Wastewater Treatment Plant," International Conference on System Theory, Control and Computing (ICSTCC), Sinaia, 2020, doi: <http://doi.org/10.1109/ICSTCC50638.2020.9259792>, IEEE, ISI Proceedings

**Articol citat în:**

J. Logan, N. Roberts and M. Smith, "Improved Operation Forecasting of Air Blowers in a Wastewater Treatment Plant via Machine Learning-based Models," SoutheastCon 2024, Atlanta, GA, USA, 2024, pp. 165-170, doi: <http://doi.org/10.1109/SoutheastCon52093.2024.10500238>

77.

64.

**8.1.4 Comunicări științifice prezentate la conferințe internaționale**

| Nr.crt. | Autori, Titlul lucrării | Titlul conferinței | Perioada | Organizator |
|---------|-------------------------|--------------------|----------|-------------|
|---------|-------------------------|--------------------|----------|-------------|

|    |                                                                                                                                                                                                                                                                                                                                               |                                                                                    |                     |       |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------|-------|
| 1  | <a href="#">Classification of skin lesions using morpho-granulometry features derived from color clusters</a><br>G Tăbăcaru, S Moldovanu, M Barbu<br>...                                                                                                                                                                                      | 2024 28th International Conference on System Theory, Control and Computing         | 10-12 oct 2024      | IEEE, |
| 2  | <a href="#">Enhancing Wastewater Treatment Sensor Fault Detection through Deep Learning</a><br>LM Ghinea, M Miron, M Barbu<br>2024 28th International Conference on System Theory, Control and Computing ...                                                                                                                                  | 2024 28th International Conference on System Theory, Control and Computing         | 10-12 oct 2024      | IEEE, |
| 3  | <a href="#">Enhancing Effluent Quality Predictions in Wastewater Treatment with LSTM Neural Network</a><br>D Voipan, I Vasiliev, L Diaconu, AE Voipan, M Barbu<br>2024 28th International Conference on System Theory, Control and Computing                                                                                                  | 2024 28th International Conference on System Theory, Control and Computing         | 10-12 oct 2024      | IEEE, |
| 4  | <a href="#">Texture Analysis of Breast US Images Using Morphological Transforms, Hausdorff Dimension and Bagging Ensemble Method</a><br>G Tăbăcaru, S Moldovanu, M Barbu<br>2024 32nd Mediterranean Conference on Control and Automation (MED), 263-267                                                                                       | 2024 28th International Conference on System Theory, Control and Computing         | 10-12 oct 2024      | IEEE, |
| 5  | Baicu LM, Andrei M, Ifrim G, Pavel SM. IoT solution for controlling and monitoring temperature in bioreactor. 28th International Conference on System Theory, Control and Computing, ICSTCC 2024, Oct. 10 – 12, Sinaia, Romania, IEEEExplore Digital Library, 2024:391-396.                                                                   | 2024 28th International Conference on System Theory, Control and Computing         | 10-12 oct 2024      | IEEE, |
| 6  | Găiceanu M, Epure S, Solea R, Buhosu R. <i>Static Power Equipment for the Active Elimination of Harmonics from the National Energy Grid</i> . Ann Mar Sci. 2024;8(1):034-041. Available from: <a href="https://dx.doi.org/10.17352/ams.000047">https://dx.doi.org/10.17352/ams.000047</a><br>ISSN: 2640-2300                                  |                                                                                    |                     |       |
| 7. | D. Ionescu; A. Filipescu; G. Simion; R. Şolea; A. Filipescu; A. Serbencu, <i>PLC Inverse Kinematics Model-Driven Digital Twin Focused on HIL for a Flexible Robotic Cell</i> , 18th International Conference on Control, Automation, Robotics and Vision (ICARCV), 12-15 December 2024, DOI: 10.1109/ICARCV63323.2024.10821631 (IEEE Explore) | 18th International Conference on Control, Automation, Robotics and Vision (ICARCV) | 12-15 December 2024 | IEEE  |
| 8. |                                                                                                                                                                                                                                                                                                                                               |                                                                                    |                     |       |

### 8.1.7 Brevete de invenție (solicitate / acordate)

Cerere de brevet depusa

RO137368A2 – Romania, „Sistem experimental și algoritm de control pentru implementarea și testarea filtrelor active electronice de putere trifazate de joasă tensiune, de tip paralel”, Marian Găiceanu, Silviu Ionuț Epure, **Răzvan-Constantin Şolea**, Alexandru Duşa, Iulian Ghenea