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**LISTA LUCRĂRILOR ȘTIINȚIFICE PUBLICATE,
CONTRACTE DE CERCETARE
ȘI BREVETE**

Lucrarea de doctorat

Contribuții la realizarea și modelarea cinematico-dinamică a roboților paraleli pentru chirurgia minim invazivă – Coordonator științific: Prof. dr.-ing. Nicolae PLITEA

A. Cărți

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2. Gherman, B., **Vaida, C.**, Pislă, D., Utilizarea și programarea calculatoarelor, Vol. II, Programare în limbajul C cu aplicații în inginerie, ediție coordonată de Prof. Dr. Ing. D. Pîslă, Ed. Mediamira, Cluj-Napoca, 2013, ISBN- 978-973-713-305-2
3. **C. Vaida**, D. Pislă, Utilizarea și programarea calculatoarelor, Vol. I Utilizarea calculatoarelor. Aplicații, ediție coordonată de Prof. Dr. Ing. D. Pîslă, Ed. Mediamira, Cluj-Napoca, 2008, ISBN – 978-973-713-247-5
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B. Scientific papers

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2. Nadas, Iuliu; Pislă, Doina; Ceccarelli, Marco; **Vaida, Calin**; Gherman, Bogdan; Tucan, Paul; Carbone, Giuseppe; *Design of Dual-Arm Exoskeleton for Mirrored Upper Limb Rehabilitation*, New Trends in Medical and Service, Robotics, pp 303-311, 2019
3. Birlescu, Iosif; Tucan, Paul; Gherman, Bogdan; **Vaida, Calin**; Crisan, Nicolae; Radu, Corina; Plitea, Nicolae; Pislă, Doina; *Kinematic Analysis for a Prostate Biopsy Parallel Robot Using Study Parameters*, Computational Kinematics, 135-142, 2018
4. Schadlbauer, Josef; **Vaida, Calin**; Tucan, Paul; Pislă, Doina; Husty, Manfred; Plitea, Nicolae; *A Complete Analysis of Singularities of a Parallel Medical, Robot* Advances in Robot Kinematics 2016, pp 81-89, 2018
5. Nadas, Iuliu Adrian; Pislă, Doina; **Vaida, Calin**; Gherman, Bogdan George; Carbone, Giuseppe; *Towards Cost-Oriented User-Friendly Robotic Systems for Post-Stroke Rehabilitation*, Handbook of Research on Biomimetics and Biomedical Robotics, pp 99-141, 2018
6. Vrublevskis, J; Duncan, S; Berthoud, L; Bowman, P; Hills, R; McCulloch, Y; Pislă, D; **Vaida, C**; Gherman, B; Hofbauer, M; *Description of European Space Agency (ESA) Remote Manipulator (RM) System Breadboard Currently Under Development for Demonstration of Critical Technology Foreseen to be Used in the Mars Sample Receiving Facility (MSRF)*, Second International Mars Sample Return, Vol. 2071, 2018

7. **Vaida, C**; Carbone, G; Plitea, N; Ulinici, I; Pisla, D; *Preliminary Design for a Spherical Parallel Robot for Shoulder Rehabilitation*, New Advances in Mechanism and Machine Science, pp 155-164, 2018
8. Birlescu, Iosif; Pisla, Doina; Gherman, Bogdan; Pisla, Adrian; **Vaida, Calin**; Carbone, Giuseppe; Plitea, Nicolae; *On the Singularities of a Parallel Robotic System Used for Elbow and Wrist Rehabilitation*, International Symposium on Advances in Robot Kinematics, pp 203-211, 2018
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10. Covaciu, Florin; Pisla, Adrian; Carbone, Giuseppe; Puskas, Ferenc; **Vaida, Calin**; Pisla, Doina; *VR interface for cooperative robots applied in dynamic environments*, 2018 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), pp 43-106, 2018
11. Lazar, Viorela Alexandra; Pisla, Doina; **Vaida, Calin**; Cafolla, Daniele; Ceccarelli, Marco; Carbone, Giuseppe; León, Jhon Freddy Rodríguez; *Experimental characterization of assisted human arm exercises*, 2018 IEEE International Conference on Automation, Quality and Testing, Robotics (AQTR), pp 43-106, 2018
12. Pisla, Doina; Birlescu, Iosif; **Vaida, Calin**; Tucan, Paul; Pisla, Adrian; Gherman, Bogdan; Crisan, Nicolae; Plitea, Nicolae; *ALGEBRAIC MODELING OF KINEMATICS AND SINGULARITIES FOR A PROSTATE BIOPSY PARALLEL ROBOT*, PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE, Vol. 19, nr. 3, pp 489-497, 2018
13. Gherman, Bogdan; Birlescu, Iosif; Tucan, Paul; Vaida, Calin; Pisla, Adrian; Pisla, Doina; *Modelling and Simulation of a Robotic System for Lower Limb Rehabilitation*, ASME 2018 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference, 2018
14. Pisla, Doina; Galdau, Bogdan; Covaciu, Florin; **Vaida, Calin (c.a.)**; Popescu, Daniela; Plitea, Nicolae; *Safety issues in the development of the experimental model for an innovative medical parallel robot used in brachytherapy*, International Journal of Production Research, vol. 55, nr. 3, pp 684-699, 2017
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19. Carbone, Giuseppe; Gherman, Bogdan; Ulinici, Ionut; **Vaida, Calin**; Pisla, Doina; *Design issues for an inherently safe robotic rehabilitation device*, International Conference on Robotics in Alpe-Adria Danube Region, pp 1025-1032, 2017

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B2. Patents

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3. Carbone, G., Pîslă, D., **Vaida, C.**, Nadas, I., *Inovative cable system for the rehabilitation of the upper limb*, A/00558/31.07.2018
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6. Gherman, B., Pîslă, D., Plitea, N., **Vaida C.**, Carbone, G., Pîslă, A., Banica, A., *Family of robots for the rehabilitation of the upper limb*, Patent pending A00375/14.06.2017

7. Plitea N., Pisla, D., **Vaida, C.**, Gherman, B., Szilaghyi, A., Galdau, B., Cocorean, D: Parallel robot for brachytherapy with two kinematic guiding chains of the platform (the needle) type 2CRRU and CRU, Patent pending, A/10004/2013
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C. Oral communications as invited speaker in international symposia

1. *Innovative Approaches in Medical Robotics*, 4th International conference **Innovative Ideas in Science** Baia Mare, Romania, 2018
2. *Development of New Parallel Robot for Minimally Invasive Surgery*, **INTERNATIONAL WORKSHOP in the Frame of Alexander von Humboldt Foundation** Project Fokoop -- DEU/1010959, Cluj-Napoca, Septembrie, 2010
3. *Development of new parallel robots for minimally invasive surgery* - during the international workshop **Laparoscopic Liver Surgery** 27–29 march 2008 organized by the University of Medicine and Pharmacy, Cluj-Napoca
4. *Development of new parallel robots for minimally invasive surgery* – during the **International Workshop of European Solutions in the Modeling and Simulation of Parallel Robots Applications** 22.05.2008 – Cluj-Napoca, Romania

D. Research Grants

D1. Coordinator

1. **High accuracy innovative approach for the robotic assisted intraoperative treatment of hepatic tumors based on imagistic-molecular diagnosis – IMPROVE**
 - Programme: Complex research project in consortia, cod PN-III-P1-1.2-PCCDI-2017 project code: PCCDI59
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration 2018-2020
 - Position: Scientific coordinator project 1
2. **Manipulation Systems for Sample Handling in a Sample Receiving Facility”**
 - Programme: ESA research programme, project code: TASUK /16/11305/NBO/1424
 - Financing Institution: ESA-European Space Agency
 - Duration: 2018-2019

3. **A multi-purpose needle insertion device for the diagnosis and treatment of cancer – ACCURATE**
 - Programme: Complex research project in consortia, Code: PN-II-PT-PCCA-2013-4-1596
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration: 2015-2017
4. **Diagnosis and therapy system for spine related diseases (SPINE)**
 - Programme: Young research teams, code: PN-II-RU-TE-2014-4-0992
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration: 2014-2016
5. **New Trends in Medical and Service Robots**
 - Programme: Exploratory workshop, code: PN-II-ID-WE-2012-4-018
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration: 1 month (2012)
6. **Simulation and control techniques for robots used in minimally invasive surgery - SIMCOSURG**
 - Programme: Bilateral Cooperation (Slovenia - Romania)
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration: 18 months
7. **Contributions to the kinematics and dynamics of parallel robots for surgery**
 - Programme: *CNCSIS type BD – Excellence scholarship*
 - Financing Institution: National Council of Scientific Research in Higher Education
 - Duration: 3 years (2006-2008)
8. **Contributions to the kinematics and dynamics of parallel robots for surgery**
 - Programme: Young PhD students competition TD (TD-437)
 - Financing Institution: National Council of Scientific Research in Higher Education
 - Duration: 12 months (2008)

D2. Member in International Grants

1. **Creative Alliance in Research and Education focused on Medical and Service Robotics**
 - Programme: Scopes International IP Grant - IZ74Z0_13736
 - Financing Institution: SNF, Switzerland
 - Duration: 3 years (2011-2013)
 - Coordinator (Prof. D. Pislă – TU-CN, Romania, Prof. A. Rodic – IMP Belgrade, Serbia, Prof. H. Bleuler – EPFL Switzerland)
2. **Development of kinematic and dynamic models for parallel robots with applications in surgery - PROINS**
 - Programme: Bilateral Cooperation (Austria - Romania)
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding

- Duration: 18 months
 - Coordinator (Prof. D. Pisla , Romania, Prof. M. Husty, Austria)
3. **Mathematische Modellierung und Experimentelle Untersuchung eines modular aufgebauten Parallelroboters in der minimal invasiven Chirurgie – Mathematical Modelling and Experimental Researches on a parallel modular robot for minimally invasive surgery**
- Programme: Bilateral Cooperation Germany - Romania
 - Financing Institution: Humboldt foundation, Germany
 - Duration: 4 years (2007 - 2011)
 - Coordinator (Prof. N. Plitea - Romania)

D3. Member in research grants won in national competitions

1. **Innovative Approaches Regarding Rehabilitation and Assistive Robotics for Healthy Ageing – AgeWell**
- Programme: POC, 20/01.09.2016
 - Financing Institution: Co-financed through the European Fund for Regional Development
 - Duration 4 years (2016 - 2020)
 - Coordinator Prof. D. Pisla, Technical Univ. of Cluj-Napoca
2. **Robotic assisted prostate biopsy, a high accuracy innovative method**
- Programme: PN-II-PT-PCCA-2013-4-0647
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration 3 years (2014 - 2016)
 - Coordinator Prof. D. Pisla, Technical Univ. of Cluj-Napoca
3. **Robotic assisted brachytherapy, an innovative approach of inoperable cancers – CHANCE**
- Programme: PN-II-PT-PCCA-2011-3.2-0414
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration 3 years (2012 - 2015)
 - Coordinator Prof. N. Plitea, Technical Univ. of Cluj-Napoca
4. **Innovative development of a virtual system for e-learning in hepatic endoscopic surgery – HEPSIM**
- Programme: PNCD II P4 92080/2008
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration 3 years (2008 - 2011)
 - Coordinator: Dr. Florin Graur, University of Medicine and Pharmacy Cluj-Napoca
5. **Multidisciplinary development of surgical robots based on innovative parallel structures**
- Programme: PNCD II Nr. 1687, Tip P-4 2007 - 2010
 - Financing Institution: Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding
 - Duration 3 years (2007 - 2010)
 - Coordinator Prof. D. Pisla, Technical Univ. of Cluj-Napoca

6. **Advanced Structural Kinematical and Dynamical Research For Open Flying Simulation System - ASKOT**
 - Programme: CNCSIS No. 120/2006
 - Financing Institution: National Council of Scientific Research in Higher Education
 - Duration 3 years (2006 - 2009)
 - Coordinator: Prof. A. Pisla, Technical Univ. of Cluj-Napoca
7. **Analysis and development of robotic structures with parallel kinematics and the implementation of testing algorithms for their performance evaluation**
 - Programme: CNCSIS No. 27702/2005
 - Financing Institution: National Council of Scientific Research in Higher Education
 - Duration 3 years (2005 - 2008)
 - Coordinator: prof. Doina Pisla, Technical Univ. of Cluj-Napoca
8. **Structural, geometric, kinematic and dynamic research for new structures of parallel micro-robots with elastic hinges**
 - Programme: CNCSIS No. 23778 /2006
 - Financing Institution: National Council of Scientific Research in Higher Education
 - Duration 3 years (2006 - 2009)
 - Coordinator: prof. Nicolae Plitea, Technical Univ. of Cluj-Napoca
9. **Promoting research and participation in European programmes in the field of parallel robots with applications in surgery – PARASURG**
 - Programme: CEEEX – Module III 12371 – 2006 (support project)
 - Financing Institution: National Council of Scientific Research in Higher Education
 - Duration 2 years (2006-2008)
 - Coordinator: prof. Doina Pisla, Technical Univ. of Cluj-Napoca

E. Industrial research and development projects

Technical coordinator

1. **Design and development of the hydraulic control system for the Beker press line**
Contract 91M/ 2005 Beneficiary S.C. SORTILEMN S.A. Gherla
2. **Design and development of an electro-hydraulic transfer system for large construction**
Contract 97M/ 2006 Beneficiary S.C. ELAN HOUSE S.R.L. Cluj-Napoca
3. **Metal waste hydraulic press**
Contract 101M/ 2013 Beneficiary S.C. AROSA S.A. Cluj-Napoca

Cluj-Napoca
26-11-2018

Dr.-Ing. Calin VAIDA
