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**L I S T**  
**scientific works in the field of teaching subjects**

**1. PhD Thesis**

**"DEVELOPMENT OF NEW PARALLEL ROBOTS FOR PROSTATE BIOPSY "**, scientific director:  
**Prof. Dr. Eng. Doina PÎSLĂ**, date of public defense of the thesis: **July 18, 2018**

**2. Published books**

1. **P. Tucan**, C. Vaida, B. Gherman, D. Pislă, *Medical Robotics Vol 1: Innovative Medical Parallel Robots for Oncology*, Cluj-Napoca, Ed. Casa Cărții de Știință, ISBN 978-606-17-219-7, 2023.
2. B. Gherman C. Vaida, **P. Tucan** D. Pislă, *Medical Robotics Vol 2: Innovative Parallel Robots for Medical Rehabilitation*, Cluj-Napoca, Ed. Casa Cărții de Știință, ISBN 978-606-17-2192-4, 2023.

**3. Book chapters**

1. Pislă, Doina; Crisan, Nicolae; Ulinici, Ionut; Gherman, Bogdan; Radu, Corina; **Tucan, Paul** ; Vaida, Calin; *Structural Study of a Robotic System for Sils Surgery* ; International Workshop on Medical and Service Robots, 20-31, 2023, Springer Nature Switzerland Cham. [https://doi.org/10.1007/978-3-031-32446-8\\_3](https://doi.org/10.1007/978-3-031-32446-8_3)
2. Pislă, Doina; Andras, Iulia; Pusca, Alexandru; Radu, Corina; Gherman, Bogdan; **Tucan, Paul** ; Crisan, Nicolae; Vaida, Calin; Al Hajjar, Nadim; *Design and Functional Analysis of a New Parallel Modular Robotic System for Single Incision Laparoscopic Surgery* , International Workshop on Medical and Service Robots, 32-41, 2023, Springer Nature Switzerland Cham. [https://doi.org/10.1007/978-3-031-32446-8\\_4](https://doi.org/10.1007/978-3-031-32446-8_4)
3. Gherman, Bogdan; Radu, Corina; Caprariu, Andrei; Al Hajjar, Nadim; Vaida, Calin; Ciocan, Andra; **Tucan, Paul** ; Moses, Emil; Pislă, Doina; *On the Stiffness Modeling of the ProHep-LCT Robotic Needle Insertion Instrument* , International Conference on Robotics in Alpe-Adria Danube Region, 245-252, 2023, Springer Nature Switzerland Cham. [https://doi.org/10.1007/978-3-031-32606-6\\_29](https://doi.org/10.1007/978-3-031-32606-6_29)
4. **Tucan, Paul** ; Gherman, Bogdan; Pislă, Adrian; Horsia, Alin; Vaida, Calin; Pislă, Doina; *A Singularity-Free Approach for Safe Operation of a Parallel Robot for Lower Limb Rehabilitation*, International Conference on Robotics in Alpe-Adria Danube Region, 141-149,2023, Springer Nature Switzerland Cham. [https://doi.org/10.1007/978-3-031-32606-6\\_17](https://doi.org/10.1007/978-3-031-32606-6_17)
5. Caprariu, Andrei; **Tucan, Paul** ; Vaida, Calin; Pislă, Adrian; Gherman, Bogdan; Pislă, Doina; *Design Optimization of RAISE Parallel Robot for Lower Limb Rehabilitation* , IFToMM World Congress on Mechanism and Machine Science,23-33, 2023, Springer Nature Switzerland Cham. [https://doi.org/10.1007/978-3-031-45705-0\\_3](https://doi.org/10.1007/978-3-031-45705-0_3)

6. Vaida, Calin; Sofan, Marius; **Tucan, Paul** ; Giurgioiu, Octavian; Pisla, Adrian; Molnar, Tibor; Gherman, Bogdan; Carbone, Giuseppe; Pisla, Doina; *New Concept Design of a Modular Robotic System for Upper Limb Rehabilitation*, IFToMM World Congress on Mechanism and Machine Science, 216-225, 2023, Springer Nature Switzerland Cham. [https://doi.org/10.1007/978-3-031-45770-8\\_22](https://doi.org/10.1007/978-3-031-45770-8_22)
7. Gherman, Bogdan; Ciocan, Andra; Caprariu, Andrei ; **Tucan, Paul** ; Radu, Corina; Vaida, Calin; Pisla, Adrian; Horsia, Alin; Al Hajjar, Nadim; Pisla, Doina; *On the Design Optimization of a Parallel Robotic System for Liver Cancer Treatment*, IFToMM World Congress on Mechanism and Machine Science, 518-528, 2023, Springer Nature Switzerland Cham. [https://doi.org/10.1007/978-3-031-45770-8\\_52](https://doi.org/10.1007/978-3-031-45770-8_52)
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9. Gherman, Bogdan ; **Tucan, Paul** ; Vaida, Calin; Crisan, Nicolae; Rus, Gabriela; Birlescu, Iosif; Pisla, Doina; *On the Kinematics and Dimensional Optimization of a Robotic System for Single Incision Laparoscopic Surgery* , International Conference on Robotics in Alpe-Adria Danube Region, 383-391, 2022, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-031-04870-8\\_45](https://doi.org/10.1007/978-3-031-04870-8_45)
10. Vaida, Calin; Birlescu, Iosif; Pusca, Alexandru; Gherman, Bogdan; **Tucan, Paul** ; Antal, Tiberiu Alexandru; Pisla, Doina ; *Geometric Modeling of a New Modular Spherical Robotic System for Single Incision Laparoscopic Surgery* , International Conference on Robotics in Alpe-Adria Danube Region, 367-374, 2022, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-031-04870-8\\_43](https://doi.org/10.1007/978-3-031-04870-8_43)
11. **Tucan, Paul** ; Gherman, Bogdan; Andras, Iulia; Vaida, Calin; Pisla, Doina; *Kinematic modeling of a parallel robot used in single incision laparoscopic surgery* , Symposium on Robot Design, Dynamics and Control, 115-122, 2022, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-031-06409-8\\_12](https://doi.org/10.1007/978-3-031-06409-8_12)
12. Nadas, I; German, B; **Tucan, P** ; Carbone, G; Pisla, A; Antal, T; Pisla, D ; *Inverse Dynamic Modeling of a Parallel Robot for Lower Limb Rehabilitation*, IFToMM International Symposium on Science of Mechanisms and Machines (SYROM), 177-186, 2022, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-031-25655-4\\_19](https://doi.org/10.1007/978-3-031-25655-4_19)
13. German, B; Horvath, D; Moses, E; Vaida, C; Starling, F; Burz, A; Popa, C; **Tucan, P** ; Al Hajjar, N; Rifle, A; *Development of a Force Feedback Control for Robotic Assisted Liver Cancer Treatment* , IFToMM International Symposium on Science of Mechanisms and Machines (SYROM),241-249, 2022, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-031-25655-4\\_25](https://doi.org/10.1007/978-3-031-25655-4_25)
14. Gherman, Bogdan; Nadas, July; **Tucan, Paul** ; Carbone, Giuseppe; Pisla, Doina; *Design and Simulation of Gait Rehabilitation Parallel Robotic System* , New Advances in Mechanisms, Mechanical Transmissions and Robotics: MTM & Robotics 2020, 2, 187-200,2021, Springer International Publishing. [https://doi.org/10.1007/978-3-030-60076-1\\_17](https://doi.org/10.1007/978-3-030-60076-1_17)
15. Vaida, Calin; Ulinici, Ionut; Banica, Alexandru; Burz, Alin; Gherman, Bogdan; **Tucan, Paul** ; Pisla, Adrian; Carbone, Giuseppe; Pisla, Doina; *First clinical evaluation of a spherical robotic system for shoulder rehabilitation* , New Trends in Medical and Service Robotics: MESROB 2020, 7, 62-70, 2021, Springer International Publishing. [https://doi.org/10.1007/978-3-030-58104-6\\_8](https://doi.org/10.1007/978-3-030-58104-6_8)

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17. Gherman, Bogdan; **Tucan, Paul** ; Vaida, Calin; Carbone, Giuseppe; Pisla, Doina; *Novel Design of the ParReEx-Elbow Parallel Robot for the Rehabilitation of Brachial Monoparesis* , International Workshop on Medical and Service Robots, 38-45, 2021, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-030-76147-9\\_5](https://doi.org/10.1007/978-3-030-76147-9_5)
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20. Pisla, Doina; Vaida, Calin; Pop, Nicoleta; Ulinici, Ionut; Banica, Alexandru; Birlescu, Iosif; **Tucan, Paul** ; Carbone, Giuseppe; Pisla, Adrian; *Dimensional and Workspace Analysis of RAISE Rehabilitation Robot*, New Trends in Mechanism and Machine Science: EuCoMeS, 8, 155-165, 2020, Springer International Publishing. [https://doi.org/10.1007/978-3-030-55061-5\\_19](https://doi.org/10.1007/978-3-030-55061-5_19)
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22. **Tucan, Paul** ; Plitea, Nicolae; Gherman, Bogdan; al Hajjar, Nadim; Radu, Corina; Vaida, Calin; Pisla, Doina; *Experimental study regarding needle deflection in robotic assisted brachytherapy of hepatocellular carcinoma*, Symposium on Robot Design, Dynamics and Control, 154-161, 2020, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-030-58380-4\\_19](https://doi.org/10.1007/978-3-030-58380-4_19)
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25. Nadas, July; Pisla, 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: Advances in Theory and Practice, 303-311, 2019, Springer International Publishing. [https://doi.org/10.1007/978-3-030-00329-6\\_34](https://doi.org/10.1007/978-3-030-00329-6_34)
26. Vaida, Calin; Tucan, Paul; Plitea, Nicolae; Lazar, Viorela; Al Hajjar, Nadim; Pisla, Doina; *Kinematic analysis of a new parallel robotic system for minimally invasive therapy of non-resectable hepatic tumors*, IFToMM World Congress on Mechanism and Machine Science, 719-728, 2019, Springer International Publishing Cham. [https://doi.org/10.1007/978-3-030-20131-9\\_72](https://doi.org/10.1007/978-3-030-20131-9_72)

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28. 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: Proceedings of the 7th International Workshop on Computational Kinematics that was held at Futuroscope-Poitiers, France, in May 2017, 135-142, 2018, Springer International Publishing. [https://doi.org/10.1007/978-3-319-60867-9\\_16](https://doi.org/10.1007/978-3-319-60867-9_16)
29. 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, 81-89, 2018, Springer International Publishing. [https://doi.org/10.1007/978-3-319-56802-7\\_9](https://doi.org/10.1007/978-3-319-56802-7_9)
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31. Pislă, Doina; **Tucan, Paul** ; Gherman, Bogdan; Crisan, Nicolae; Plitea, Nicolae; Covaciu, Florin; *Graphical Simulation System for Functional Analysis of a Parallel Robot for Transperineal Prostate Biopsy* , Applied Mechanics and Materials, 823, 101-106, 2016, Trans Tech Publications Ltd. <https://doi.org/10.4028/www.scientific.net/AMM.823.101>

#### 4. Papers published in ISI indexed journals

1. Pislă, Doina; Al Hajjar, Nadim; Gherman, Bogdan; Radu, Corina; Antal, Tiberius ; **Tucan, Paul** ; Literate, Ruxanda; Vaida, Calin; *Development of a 6-DOF Parallel Robot for Potential Single-Incision Laparoscopic Surgery Application*, MACHINES, 2023, 11(10), <https://doi.org/10.3390/machines11100978>
2. Pislă, Doina; Crisan, Nicolae; Gherman, Bogdan; Andras, Iulia; **Tucan, Paul** ; Radu, Corina; Pusca, Alexandru; Vaida, Calin; Al Hajjar, Nadim; *Safety Issues in the Development of an Innovative Medical Parallel Robot Used in Renal Single-Incision Laparoscopic Surgery*, JOURNAL OF CLINICAL MEDICINE, 2023, 12(14) , <https://doi.org/10.3390/jcm12144617>
3. Rus, Gabriela; Andras, Iulia; Vaida, Calin; Crisan, Nicolae; Gherman, Bogdan; Radu, Corina; **Tucan, Paul** ; Iakab, Stefan; Hajjar, Nadim Al; Pislă, Doina; *Artificial Intelligence-Based Hazard Detection in Robotic-Assisted Single-Incision Oncologic Surgery*, CANCER, 2023, 15(13), <https://doi.org/10.3390/cancers15133387>
4. Covaciu, Florin; Crisan, Nicolae; Vaida, Calin; Andras, Iulia; Pusca, Alexandru; Gherman, Bogdan; Radu, Corina; **Tucan, Paul** ; Al Hajjar, Nadim; Pislă, Doina; *Integration of Virtual Reality in the Control System of an Innovative Medical Robot for Single-Incision Laparoscopic Surgery*, SENSORS, 2023, 23(12) , <https://doi.org/10.3390/s23125400>
5. Tohanean, Nicoleta; **Tucan, Paul** ; Vanta, Oana-Maria; Abrudan, Cristian; Pintea, Sebastian; Gherman, Bogdan; Burz, Alin; Banica, Alexandru; Vaida, Calin; Neguran, Deborah Alice; Ordog, Andreea; Tarnita, Daniela; Pislă, Doina; *The Efficacy of the NeuroAssist Robotic System for Motor Rehabilitation of the Upper Limb-Promising Results from a Pilot Study*, JOURNAL OF CLINICAL MEDICINE, 2023, 12(2), <https://doi.org/10.3390/jcm12020425>



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9. Pisla, Doina; Birlescu, Iosif; Pusca, Alexandru; **Tucan, Paul** ; Gherman, Bogdan; Pisla, Adrian; Antal, Tiberius; Vaida, Calin; *Kinematics and workspace analysis of an innovative 6-dof parallel robot for SILS* , PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES INFORMATION SCIENCE, 2022, 23(3), 279-288, [https://acad.ro/sectii2002/proceedings/doc2022-3/07-Pisla\\_Birlescu.pdf](https://acad.ro/sectii2002/proceedings/doc2022-3/07-Pisla_Birlescu.pdf)
10. Gherman, Bogdan; Al Hajjar, Nadim; **Tucan, Paul** ; Radu, Corina; Vaida, Calin; Moses, Emil; Burz, Alin; Pisla, Doina; *Risk Assessment-Oriented Design of a Needle Insertion Robotic System for Non-Resectable Liver Tumors*, HEALTHCARE, 2022, 10(2), <https://doi.org/10.3390/healthcare10020389>
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14. Caprariu, Andrei; Al Hajjar, Nadim; Vaida, Calin; Graur, Florin; Pisla, Adrian; Moses, Emil; **Tucan, Paul** ; Radu, Corina; Birlescu, Iosif; Pisla, Doina; *A functional design analysis for a robotic guided instrument used in radiofrequency ablation*, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING, 2022, 65(1S), <https://atna-mam.utcluj.ro/index.php/Acta/article/view/1734>
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  20. Gherman, Bogdan; Puskas, Ferenc; **Tucan, Paul** ; Roman, Cecilia; Pisla, Adrian; Vaida, Calin; Birlescu, Iosif; Pisla, Doina; *A robotic-assisted sputum collection booth*, ACTA TECHNICA NAPOCENSIS SERIES-APPLIED MATHEMATICS MECHANICS AND ENGINEERING, 2021, 64(4), <https://atna-mam.utcluj.ro/index.php/Acta/article/view/1664> .
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**Signature:**

