europass Curriculum vitae

PERSONAL INFORMATION

Iosif BIRLESCU

Oasului Str. no. 86-90, Cluj-Napoca, Romania

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Gender Male | Date of birth 22 Nov 1986 | Nationality Romanian

WORK EXPERIENCE

June 2022 – Present — Lecturer

Technical University of Cluj-Napoca, Romania
Faculty of Industrial Engineering, Robotics and Production Management

– Courses and laboratory classes for C standard and Matlab

October 2022 – June 2023 — Research Engineer

RobotVision SRL
https://robotvision.ro/

Mathematical modeling for robotic systems (e.g., kinematics, dynamics, path planning), prototyping, and implementing robotic solutions

October 2020 – June 2022 — Associate Teacher

Technical University of Cluj-Napoca, Romania
Faculty of Industrial Engineering, Robotics and Production Management

– Preparing and delivering laboratory classes (for the programming course) for C standard and Matlab
– Preparing laboratory exams and evaluating the students

Oct 2015 – Oct 2022 — Junior researcher

CESTER Research Centre, Technical University of Cluj-Napoca, Romania
https://cester.utcluj.ro/

– Research and Development in the field of medical robotics
– Scientific Programming used to create various mathematical models
– Scientific publications

Dec 2014 – May 2015 — Professional Internship

Medical University of Vienna, Austria
Department of Medical Radiation Physics and Oncology

– Research and Development in the field of data processing and medical imaging
– Developing a computational model to project retinal images onto a 3D virtual model of the eye
– The results materialized in my Master's Thesis

EDUCATION AND TRAINING

2020–2022 — Post Doctoral Researcher

Technical University of Cluj-Napoca, Romania

Researches conducted for the development of a surgical robot

Researches founded by the project "Entrepreneurial competencies and excellence research in doctoral and postdoctoral studies programs" - ANTREDOC

2015–2019 — PhD in Mechanical Engineering

Technical University of Cluj-Napoca, Romania

Thesis title: "Studies regarding the safe operation of innovative parallel medical robots"

Fonded by various National and International research grants: ROBOCORE, ACCURATE, ESA, AGEWELL, ACCURATE, IMPROVE, NEUROASSIST, ONTARGET, CHALLENGE

2013–2015 **Biomedical Engineering Sciences (MSc)**

University of Applied Sciences, Technikum Wien, Austria

Thesis title: "Projection of ophthalmic fundus images onto a three-dimensional model of the eye"

Thesis awarded as "Honorary Mention" (I was among the 3 finalists) at "2020 IEEE RAS Romania Chapter - Best PhD Thesis Competition"

2008–2012 **Optometry (BSc)**

Transilvania University, Brasov Romania

Thesis title: "Methods used in the correction of amblyopia on preschool children"

PERSONAL SKILLS

Mother tongue: Romanian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
Common European Framework of Reference for Languages

Communication skills
- team work: worked for 7 years in a research center. Team work was a must.
- mediating skills: I am empathetic and can really listen to my colleagues; I try my best to make myself clear.
- teacher: I offered many math coaching sessions and have some experience in teaching

Digital competences

SELF-ASSESSMENT				
Information Processing	Communication	Content creation	Safety	Problem solving
Proficient user	Independent user	Basic user	Independent user	Proficient user

Digital competences - Self-assessment grid

Computer and digital skills
- Competent with most Microsoft Office programs
- Programming (Matlab, Python, C, LabView, Maple). I am proficient in scientific programming and embedded systems (mostly microcontrollers), and I have good knowledge in CAN Open.
- CAD (Siemens NX), mostly used in modelling but also in kinematic and dynamic simulations and FEA (Finite Element Analysis)

Other skills and hobbies: Cooking, dog training (still in development), computer games, basketball, mathematics, physics, good music.

PATENTS

Awarded patents
- Parallel robot for the mobility rehabilitation of the lower limb: OSIM:RO-133814/29.10.2021
- Inovative parallel robot for the lower limb rehabilitation: OSIM:RO133815/29.10.2021

Pending patents
- Automated medical instrument with multiple parallel needles for the intersititial brachytherapy
- Automated medical instrument for the insertion of brachytherapy needles on parallel trajectories
- Automated medical instrument for the manipulation of a laparoscopic ultasound probe
- Automated medical instrument for robotic assisted biopsy
- Automated medical instrument for robotic assisted ablation

PUBLICATIONS

[1] B.; Vaida C. Pisla D.; Birlescu I.; Crisan N.; Pusca A.; Andras I.; Tucan P.; Radu C.; Gherman. “Singularity Analysis and Geometric Optimization of a 6-DOF Parallel Robot for SILS”. In: *Machines* (2022).

[2] I. Birlescu; C. Vaida; A. Pusca; G. Rus; D. Pisla; “A New Approach to Forward Kinematics for a SILS Robotic Orientation Platform Based on Perturbation Theory”. In: *Advances in Robot Kinematics 2022* (2022).

[3] B. Gherman; P. Tucan; C. Vaida; N. Crisan; G. Rus; I. Birlescu; D. Pisla; “On the Kinematics and Dimensional Optimization of a Robotic System for Single Incision Laparoscopic Surgery”. In: *Advances in Service and Industrial Robotics: RAAD 2022* (2022).

[4] D. Pisla; B. Gherman; P. Tucan; I. Birlescu; A. Pusca; G. Rus; A. Pisla; C. Vaida; “Application oriented modelling and simulation of an innovative parallel robot for single incision laparoscopic surgery”. In: *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (2022).

[5] C. Vaida; I. Birlescu; A. Pusca; B. Gherman; P. Tucan; T. Antal; D. Pisla; “Geometric Modeling of a New Modular Spherical Robotic System for Single Incision Laparoscopic Surgery”. In: *Advances in Service and Industrial Robotics: RAAD 2022* (2022).

[6] Tucan P.; Vaida C.; Ulinici I.; Banica A.; Burz A.; Pop N.; Birlescu I.; Gherman B.; Plitea N.; Antal T.; Carbone G.; Pisla D. “Optimization of the ASPIRE Spherical Parallel Rehabilitation Robot Based on Its Clinical Evaluation”. In: *Int. J. Environ. Res. Public Health* (2021).

[7] I. Nadas; B. Gherman; I. Birlescu; R. Bogateanu; A. Banica; G. Carbone; D. Pisla; “Dynamic balancing of RECOVER robotic system”. In: *, IOP Conf. Ser.: Mater. Sci. Eng* (2020).

[8] Z. Major; C. Vaida; K. Major; P. Tucan; G. Simori; A. Banica; E. Brusturean; A. Burz; R. Craciunas; I. Ulinici; G. Carbone; B. Gherman; I. Birlescu; D. Pisla; “The Impact of Robotic Rehabilitation on the Motor System in Neurological Diseases. A Multimodal Neurophysiological Approach”. In: *Int. Jour. Of Environmental Research and Public Health* (2020).

[9] N. Pop; I. Ulinici; P. Tucan; I. Bîrlescu; C. Vaida; G. Carbone; D. Pisla; “EXPERIMENTAL EVALUATION OF A PARALLEL REHABILITATION ROBOT FOR NEUROMOTOR IMPAIRMENT”. In: *Symmetry* (2021).

[10] Radu C.; Fisher P.; Mitrea D.; Birlescu I.; Marita T.; Vancea F.; Florian V.; Tefas C.; Badea R.; Ștefănescu H.;Nedevschi S.; Pisla D.;Hajjar N.A; “Integration of Real-Time Image Fusion in the Robotic-Assisted Treatment of Hepatocellular Carcinoma”. In: *Biology* (2020).

[11] I. Birlescu; M. Husty; C. Vaida; B. Gherman; P. Tucan; D. Pisla; “Joint-Space Characterization of a Medical Parallel Robot Based on a Dual Quaternion Representation of SE(3)”. In: *Mathematics* (2020).

[12] C. Vaida; I. Birlescu; A. Pisla; I. Ulinici; D. Tarnita; G. Carbone; D. Pisla; “Systematic design of a parallel robot for lower limb rehabilitaiton”. In: *IEEE Access* (2020).

[13] C. Vaida; I. Birlescu; A. Pisla; I. Ulinici; D. Tarnita; G. Carbone; D. Pisla; “Motion Parameterization of Parallel Robots Used in Lower Limb Rehabilitation”. In: *, Advances in Robot Kinematics -ARK 2020* (2020).

[14] B. Gherman; I. Birlescu; A. Burz; I. Ulinici; P. Tucan; D. Pisla; “ Kinematic analysis of two innovative medical instruments for the robotic assisted treatment of non-resectable liver tumors”. In: *European Conference on Mechanism Science* (2020).

[15] I. Birlescu; M. Husty; C. Vaida; N. Plitea; A. Nayak; D. Pisla; “Complete Geometric Analysis Using the Study SE(3) Parameters for a Novel, Minimally Invasive Robot Used in Liver Cancer Treatment”. In: *Symmetry* (2019).

[16] D. Pisla; C. Vaida; I. Birlescu; B. Gherman; N. Plitea; “Risk management for the reliability of robotic assisted treatment of non-resectable liver tumors”. In: *Applied sciences* (2019).

[17] B. Gherman; I. Birlescu; N. Plitea; G. Carbonne; D. Tarnita; D. Pisla; “On the singularity-free workspace of a parallel robot for lower-limb rehabilitation”. In: *Proceedings of the Romanian Academy, series A, Mathematics, Physics, technical Sciences, Information Science* (2019).

[18] M. Husty; I. Birlescu; P. Tucan; C. Vaida; D. Pisla; “An algebraic parameterization approach for parallel robots analysis”. In: *Mechanism and Machine Theory* (2019).

[19] I. Birlescu; D. Pisla; B. Gherman; A. Pisla; C. Vaida; G. Carbone; N. Plitea; “On the Singularities of a Parallel Robotic System Used for Elbow and Wrist Rehabilitation”. In: *International Symposium on Advances in Robot Kinematics* (2019).

[20] C. Vaida; I. Birlescu; A. Pisla; G. Carbone; N. Plitea; I. Ulinici; B. Gherman; F. Puskas; P. Tucan; “RAISE-An Innovative Parallel Robotic System for Lower Limb Rehabilitation”. In: *New Trends in Medical and Service, Robotics, Springer* (2019).

[21] B. Gherman; I. Birlescu; F. Puskas; A. Pisla; G. Carbone; P. Tucan; A. Banica; D. Pisla; “A kinematic characterization of a parallel robotic system for lower limb rehabilitation”. In: *EuCoMeS 2018* (2018).

[22] D. Pisla; I. Birlescu; C. Vaida; P. Tucan; A. Pisla; B. Gherman; N. Crisan; N. Plitea; “Algebraic modeling of kinematics and singularities for a prostate biopsy parallel robot”. In: *Proceedings of the Romanian Academy Series A. Mathematics Physics Technical Sciences Information Science* (2018).

[23] C. Vaida; I. Birlescu; N. Plitea; N. Crisan; D. Pisla; “Design of a needle insertion module for robotic assisted transperineal prostate biopsy”. In: *Mechanisms and Machine Science* (2018).

[24] I. Birlescu; P. Tucan; B. Gherman; C. Vaida; N. Crisan; C. Radu; N. Plitea; D. Pisla; “Kinematic Analysis For A Prostate Biopsy Parallel Robot Using Study Parameters”. In: *Mechanisms and Machine Science* (2018).

[25] B. Gherman; I. Birlescu; P. Tucan; C. Vaida; A. Pisla; D. Pisla; “Modelling and Simulation of a Robotic System for Lower Limb Rehabilitation”. In: *Proceedings of the ASME Design Engineering Technical Conference* (2018).

[26] D. Pisla; I. Birlescu; C. Vaida; P. Tucan; B. Gherman; D. Popescu; N. Plitea; “Towards a fail-safe prostate biopsy parallel robot using algebraic geometry”. In: *DEStech Transactions on Engineering and Technology Research* (2017).

[27] P. Tucan; C. Vaida; B. Gherman; F. Craciun; N. Plitea; Birlescu I.; D. Pisla; “Control system of a medical parallel robot for transperineal prostate biopsy”. In: *International Conference on System Theory, Control and Computing* (2017).

[28] G. Heilemann; L. Fetty; I. Birlescu; et al. “OC-0152: Novel software modules for treatment planning of 106Ru eye plaque brachytherapy”. In: *Radiotherapy and Oncology* (2016).

[29] G. Heilemann; L. Fetty; M. Blaickner; N. Nesvacil; I. Birlescu; et al: “: Evaluation of Dose Response in 106Ru Eye Plaque Brachytherapy Using a Novel Software Tool”. In: *Brachytherapy* (2016).