PERSONAL INFORMATION

Mihai Dragusanu

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Gender male | Date of birth 24/08/1993 | Nationality ROMANIA

WORK EXPERIENCE

May 2023 - As of current date

Assistant Professor and Researcher (RTD-A)

Design and prototyping device for rehabilitative and assistive robotics

University of Siena, SIRSLab, SIENA - ITALY
Business or sector: engineering and design, informatics/electronics.

Oct 2022 - April 2023

RESEARCH GRANT FUNDED BY THE DEPARTMENT OF INFORMATION ENGINEERING AND MATHEMATICS - UNIVERSITY OF SIENA, FOR A TOTAL OF 5 MONTHS

Researcher

Design and prototyping device with tactile feedback using wearable haptic interfaces for controlling assistive robotic arms.

University of Siena, SIRSLab, SIENA - ITALY
Business or sector: engineering and design, informatics/electronics.

Dec 2018 - May 2019

Researcher

Design of a tendon-actuated exoskeleton for wrist training and support

Design, prototyping and monitoring (through two interfaces, one desktop and the other for smartphones) of an exoskeleton for wrist rehabilitation with a tendon-based transmission system.

University of Siena, SIRSLab, SIENA - ITALY
Business or sector Engineering and design , computer science, data processing and acquisition.

Apr 2016 - Nov 2016

Researcher

Design and prototyping of a wearable interface for human robot control

Control of a portable ROBOTIC arm (useful for people with disabilities in their daily activities) through a wearable interface: the HITE (Hat Interaction Traking EMG) project was born.

University of Siena, SIRSLab, SIENA - ITALY
Business or sector: engineering and design, informatics/electronics.

EDUCATION AND TRAINING

2019 - 2023

Ph.D. in Information Engineering and Science

Livello QEQ 8

University of Siena - Department of Information Engineering and Mathematics
SECTOR: ING-IND/13 MECHANICS APPLIED TO MACHINES
TITLE OF THE THESIS: Design of Soft-Rigid Devices for Rehabilitative and Assistive Robotics
SCORE: EXCELLENT CUM LAUDE

Dec 2016 - Jul 2019

Master degree on Computer and Automation Engineering - LM-32 (Programs: Robotics And Automation)

Livello QEQ 7

University of Siena - Department of Information Engineering and Mathematics

TITLE OF THE THESIS: DESIGN OF A TENDON-ACTUATED EXOSKELETON FOR WRIST TRAINING AND SUPPORT

ADVISOR: MALVEZZI MONICA.

CO-ADVISOR; PRATTICHIZZO DOMENICO.

SCORE: 110/110 SUMMA CUM LAUDE.

Oct 2013 - Dec 2016

1st cycle degree/Bachelor - Computer And Information Engineering (Programs: Systems and Automation)

Livello QEQ 6

University of Siena - Department of Information Engineering and Mathematics

TITLE OF THE THESIS: HITE (HAT INTERACTION TRACKING EMG): PROGETTO DI UNA INTERFACCIA INDOSSABILE PER HUMAN ROBOT CONTROL

ADVISOR: PRATTICHIZZO DOMENICO.

FINAL MARK: 110/110 SUMMA CUM LAUDE.

Jul - 2013

Pre-university studies

Secondary school diploma: Industrial Vocational School
Italian secondary school diploma
Final Mark: 100/100

PERSONAL SKILLS

Mother tongue(s): Romanian

Foreign language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2

- Language Certification - PET - University of London - Cambridge, 2013 - Livello europeo: B1.
- Idoneità di Lingua Inglese - Università degli Studi di Siena, 05/07/2017 - Livello europeo: B2.

Italian	C2	C2	C2	C2	C2

Programming languages: C, C++, VB/VB .NET/VBA, VISUALC++, C#, JAVA(BASE KNOWLEDGE), SWIFT(BASE KNOWLEDGE), PYTHON, PHP (CON HTML, XHTML, LATEX LINGUAGGIO DI MARKUP E CSS PER LA FORMATTAZIONE) , ARDUINO, ASSEMBLY(ASSEMBLER MIPS E ASSEMBLER 8086 - BASE KNOWLEDGE), LINGUAGGIO MATLAB/SCILAB.

Popular scanner and parser development tools:

- LEX/FLEX PER SCANNER;
- YACC PER PARSER;

3D modeling and FEM analysis: FUSION 360, SOLIDWORKS, CREO, COMSOL, ANSYS

Digital skills

SELF-ASSESSMENT				
INFORMATION PROCESSING	COMMUNICATION	CONTENT CREATION	SAFETY	PROBLEM SOLVING
Proficient user	Proficient user	Proficient user	Independent user	Proficient user

ECDL (EUROPEAN COMPUTER DRIVING LICENCE)

Basic digital competence:

OFFICE AUTOMATION
Word processing: (Excellent) | Spreadsheets: (Excellent) | Software of presentation: (Excellent) | Office suites: (Good) | Web Browser: (Excellent)
SYSTEMS AND NETWORKS MANAGEMENT
Network architectures: (Good) | Operating systems: (Excellent)
GRAPHICS AND MULTIMEDIA
Raster graphics editors: (Excellent)
APPLICATION SOFTWARE
Data Visualization: MATLAB | Use of CAD software: (Excellent)

AWARDS

Oct 2024 — Young Authors Best Paper Award 2023

Awarded with the "Fabrizio Flacco" Young Authors Best Paper Award 2023 for the paper *Dragusanu, M. et al., "Design, Development, and Control of a Hand/Wrist Exoskeleton for Rehabilitation and Training", IEEE Transactions on Robotics, vol. 38, n. 3, pp. 1472-1488, 2022.*

May 2023 — ICRA Travel Grant 2023

Awarded with the ICRA Travel Grant to attend the ICRA2023conference London.

Oct 2022 — Best Student Paper Award

Awarded for the best paper work at the 4th Italian Robotics and Intelligent Machines Conference with *The DressGripper: A Collaborative Gripper With Electromagnetic Fingertips for Dressing Assistance.*

Sept 2022 — RSJ Pioneering Research Award

Finalist for the RSJ Pioneering Research Award in the Robot and Human Interactive Communication of IEEE Ro-Man 2022 international conference, with the project, *HAPP: a Haptic Portable Pad for Hand Disease Manual Treatment.*

Jul 2017 — Best Student Award for Computer Science and Information Engineering

Awarded by the director of the Department of Information Engineering and Mathematical Sciences as the best student of the Computer and Information Engineering course in the academic year 2015-2016.

JURNAL PUBBLICATION

"MGlove-TS: A modular soft glove based on twisted string actuators and flexible structures"
M. Dragusanu, D. Troisi, B. Suthar, I. Hussain, D. Prattichizzo, and M. Malvezzi *Mechatronics, 98, 103141.*
doi.org/10.1016/j.mechatronics.2024.103141

"Soft, Rigid, and Hybrid Robotic Exoskeletons for Hand Rehabilitation: Roadmap with Impairment-Oriented Rationale for Devices Design and Selection"
Achilli, G.M.; Amici, C.; Dragusanu, M.; Gobbo, M.; Logozzo, S.; Malvezzi, M.; Tiboni, M.; Valigi, M.C. *Appl. Sci.* 2023, *13*, 11287.
doi.org/10.3390/app132011287

"The DressGripper: A Collaborative Gripper With Electromagnetic Fingertips for Dressing Assistance"
M. Dragusanu *et al.*, in *IEEE Robotics and Automation Letters (RA-L)*, vol. 7, no. 3, pp. 7479-7486, July 2022.
doi.org/10.1109/LRA.2022.3183756

"Design, Development, and Control of a Hand/Wrist Exoskeleton for Rehabilitation and Training"
M. Dragusanu, M. Z. Iqbal, T. L. Baldi, D. Prattichizzo and M. Malvezzi, in *IEEE Transactions on Robotics (T-RO)*, vol. 38, no. 3, pp. 1472-1488, June 2022.
doi.org/10.1109/TRO.2022.3172510

"Design and Prototyping of an Underactuated Hand Exoskeleton With Fingers Coupled by a Gear-Based Differential"
M. Dragusanu, D. Troisi, A. Villani, D. Prattichizzo and M. Malvezzi in *Front. Robot. AI*, 2022.
doi.org/10.3389/frobt.2022.862340

Design of a Wearable Haptic Device for Hand Palm Cutaneous Feedback. M. Dragusanu, A. Villani, D. Prattichizzo and M. Malvezzi in *Front. Robot. AI*, 2021.
doi.org/10.3389/frobt.2021.706627

CONFERENCE PUBBLICATION

"Validation and Usability Assessment of The HapticPalm, a Wearable Device for Hand Palm Force Feedback
A. Villani, M. Dragusanu, D. Prattichizzo, and M. Malvezzi accepted at IEEE 2024 Haptics Symposium, 7-10 April 2023.

"Compliant finger joint with controlled variable stiffness based on twisted strings actuations"
M. Dragusanu, D. Troisi, A. Villani, D. Prattichizzo, and M. Malvezzi. In 2023 IEEE International Conference on Robotics and Automation (ICRA) (pp. 7378-7384). IEEE.
doi: 10.1109/ICRA48891.2023.10160353.

"HapticPalm: A Wearable Robotic Device for Haptics and Rehabilitative Hand Treatments"
D. Troisi, M. Dragusanu, A. Villani, D. Prattichizzo, and M. Malvezzi in Social Robotics: 14th International Conference, (ICSR), December 2022, Proceedings, Part II (pp. 402-411). Cham: Springer Nature Switzerland.
doi.org/10.1007/978-3-031-24670-8_36

"HAPP: a Haptic Portable Pad for Hand Disease Manual Treatment"
M. Dragusanu, D. Troisi, A. Villani, D. Prattichizzo, and M. Malvezzi in 31st IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), 29 Aug-02 Sept, 2022, pp. 345-350.
doi.org/10.1109/RO-MAN53752.2022.9900810

"Theoretical and Experimental Characterization of a New Robotic gripper's Joint"
G. M. Achilli, S. Logozzo, M. C. Valigi, M. Dragusanu, and M. Malvezzi in: Niola, V., Gasparetto, A., Quaglia, G., Carbone, G. (eds) Advances in Italian Mechanism Science. IFToMM 7-9 Sept 2022. Mechanisms and Machine Science, vol 122. Springer, Cham.
doi.org/10.1007/978-3-031-10776-4_85

"HANS: a Haptic System for Human-to-Human Remote Handshake"
M. Dragusanu, M. Z. Iqbal, A. Villani, N. D'Aurizio, D. Prattichizzo, and M. Malvezzi in 9th IEEE RAS/EMBS International Conference for Biomedical Robotics and Biomechatronics (BioRob), 2022, pp. 1-8.
doi.org/10.1109/BioRob52689.2022.9925284.

"Exploiting a Wearable Extra-Finger for Haptic Applications"
M. Dragusanu, Z. Iqbal, D. Prattichizzo, and M. Malvezzi in 13th International Conference on Human Haptic Sensing and Touch Enabled Computer Applications, EuroHaptics 2022, May 22–25, Springer Nature, 2022 pp. 366–368.
doi.org/10.1007/978-3-031-06249-0

"The Wavejoints: A Novel Methodology to Design Soft-Rigid Grippers Made by Monolithic 3D Printed Fingers with Adjustable Joint Stiffness"
M. Dragusanu, G. M. Achilli, M. C. Valigi, D. Prattichizzo, M. Malvezzi, and G. Salvietti in International Conference on Robotics and Automation (ICRA), May 23-27, 2022, pp. 6173-6179.
doi.org/10.1109/ICRA46639.2022.9811548

"Design of a Modular Hand Exoskeleton for Rehabilitation and Training"
M. Dragusanu, Z. Iqbal, D. Prattichizzo, and M. Malvezzi in International Mechanical Engineering Congress and Exposition. Volume 5: Biomedical and Biotechnology, ASME, November 1–5, 2021.
doi.org/10.1115/IMECE2021-70343

"Design, Development, and Control of a Tendon-actuated Exoskeleton for Wrist Rehabilitation and Training"
M. Dragusanu, T. L. Baldi, Z. Iqbal, D. Prattichizzo, and M. Malvezzi in IEEE International Conference on Robotics and Automation (ICRA), 31 May - 30 Aug, 2020, pp. 1749-1754.
doi.org/10.1109/ICRA40945.2020.9197013

"Design of a wearable interface for lightweight robotic arm for people with mobility impairments"
T. L. Baldi, G. Spagnoletti, M. Dragusanu and D. Prattichizzo, in International Conference on Rehabilitation Robotics (ICORR), 2017, pp. 1567-1573.
doi.org/10.1109/ICORR.2017.8009471

PRESENTATION AT CONFERENCE

- Technical Paper Publication a ASME/IMECE 2021 - International Mechanical Engineering Congress & Exposition 1-5 Nov 2021.
  TITLE OF PRESENTATION: *Kinematic Synthesis And Design Of A Modular Hand Exoskeleton For Rehabilitation And Training.*
- Technical Presentation a ASME/IMECE 2021 - International Mechanical Engineering Congress & Exposition 1-5 Nov 2021.
  TITLE OF PRESENTATION: *Design Of A Wearable And Modular Haptic Device For Hand Palm Cutaneous Feedback.*
- International Conference on Robotics and Automation (ICRA), 23-27 Mag 2022.
  TITLE OF PRESENTATION: *The Wavejoints: A Novel Methodology To Design Soft-Rigid Grippers Made By Monolithic 3D Printed Fingers With Adjustable Joint Stiffness.*

- The 9th IEEE RAS/EMBS International Conference on Biomedical Robotics & Biomechatronics (BioRob 2022).
  TITLE OF PRESENTATION: *Hans: A Haptic System For Human-To-Human Remote Handshake.*
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 23-27 Oct, 2022.
  TITLE OF PRESENTATION: *The Dressgripper: A Collaborative Gripper With Electromagnetic Fingertips For Dressing Assistance.*
- The 14th International Conference on Social Robotics (ICSR), 13-16 Dic, 2022.
  TITLE OF PRESENTATION: *Hapticpalm: A Wearable Robotic Device For Haptics And Rehabilitative Hand Treatments.*
- International Conference on Robotics and Automation (ICRA), 29 May-02 June 2023. **TITLE OF PRESENTATION:** *Design, Development, and Control of a Hand/ Wrist Exoskeleton for Rehabilitation and Training.*
- I-RIM - Conferenza Italiana di Robotica e Macchine Intelligenti, 10-12 Dic, 2020.
  TITLE OF PRESENTATION: *Development Of A Wearable Exoskeleton For Hand/Wrist Rehabilitation And Training.*
- I-RIM - Conferenza Italiana di Robotica e Macchine Intelligenti, 7-9 Ott, 2022.
  TITLE OF PRESENTATION: *Finger Actuation Of A Modular Wearable Exoskeleton For Hand/Wrist Rehabilitation And Training.*
  TITOLO PRESENTAZIONE: *Soft Collaborative Gripper For Dressing Assistance.*

PARTICIPATION IN PROJECTS AND GROUPS OF RESEARCH

ITALIAN RESEARCH GROUPS

- Participation with the SIRSLab research group of the Department of Information Engineering and Mathematics Sciences, coordinated by Prof. Domenico Prattichizzo, University of Siena.
- Ongoing research collaboration with the Global Optimization Laboratory research group, Department of Information Engineering, University of Florence on the topic of structural optimization of passive joints in underactuated robotic grippers.
- Ongoing research collaboration with the research group of SSD ING-IND/13 of the University of Perugia on the topic of structural optimization of passive joints in underactuated robotic grippers.
  Results of the collaboration are reported below:
  > doi.org/10.1109/ICRA46639.2022.9811548;
  > doi.org/10.1007/978-3-031-10776-4_85 ;
  > doi.org/10.1109/LRA.2022.3183756

INTERNATIONAL RESEARCH GROUPS

- Mechanical Engineering Group, *Khalifa University, Abu Dhabi, UAE.*
  Ongoing research collaboration with Irfan Hussain (Assistant Professor) and Bhivraj Suthar (Post.-Doc) on the topic of Twisted String Actuators (TSA) of hand and wrist exoskeletons for rehabilitation and assistance.
- Communications Systems Group, *Pontifícia Universidade Católica do Rio de Janeiro.* Ongoing research collaboration with Dr. Alan Kubrusly (Assistant Professor) on the topic of numerical simulation of ultrasound wave transmission in railway tracks.

PROJECTS

- Participation in the research project THE, PNRR: “Ecosistema dell’Innovazione” Tuscany Health Ecosystem
- Collaboration in the writing of the PRIN-2022 research project in collaboration with the University of Brescia and the University of Naples.
- Participation in the RAISE research project (Railway track integrity detection system) funded by the Italy - Tuscany Region in the Por FESR 2014-2020 tender.
- Participation in the research project INBOTS (Inclusive Robotics for a Better Society) funded by the European Union in the H2020 program.

DIDACTICS

Tutoring activity

Tutor activity of Physics I at the Department of Information Engineering and Mathematical Sciences (University of Siena).
- A.A. 2020/2021;
- A.A. 2021/2022;

Co-Supervisor of the following master theses

- Design and prototyping of a differential mechanism for the actuation of a hand exoskeleton; *(Laurea Magistrale in Computer and Automation Engineering - Ingegneria Informatica e Dell’Automazione).*

- A data fusion algorithm for Multi-Tracking System using multiplicative extended Kalman Filter; *(Laurea Magistrale in Computer and Automation Engineering - Ingegneria Informatica e Dell'Automazione).*
- Design and prototyping of a 5-DoF robotic extra-finger for haptics and rehabilitation; *(Laurea Magistrale in Engineering Management).*

Tutorials and teaching activities at support of the DIGITAL MODELING, DESIGN AND MANUFACTURING course of the master's degree in Engineering at the Department of Information Engineering and Mathematical Sciences from 2020.

Teaching activities

DIGITAL MODELLING, DESIGN AND MANUFACTURING
Course year: 2 Second cycle degree (Laurea Magistrale) ENGINEERING MANAGEMENT A.Y. 2022/2023

OTHER INFORMATION

- Computer and Information Engineering student representative (University of Siena) from 2014 to 2016;
- Student representative of the master's degree in Computer and Automation engineering (University of Siena curricula: Robotics and Automation) from 2016 to 2018;
- Ph.D. student representative of the Department of Information Engineering and Mathematical Sciences (University of Siena), from 2019 to 2021;
- DE&I Mentor - Mentor for diversity, equity and inclusion from 2023 to now;
- Invited speaker at ICRA conference Workshop 2023 - Emerging paradigms for assistive robotic manipulation: from research labs to the real world
- Invited speaker at I-RIM3D conference Workshop 2024 - Novel paradigms for physical human-robot interaction in real and augmented environments
- Invited speaker at conference Work and disability 2023 organized by Siena University

In compliance with the Italian Legislative Decree no. 196 dated 30/06/2003, I hereby authorize the recipient of this document to use and process my personal details for the purpose of recruiting and selecting staff and I confirm to be informed of my rights in accordance to art. 7 of the above mentioned decree.

Siena, 15/02/2024

Signature