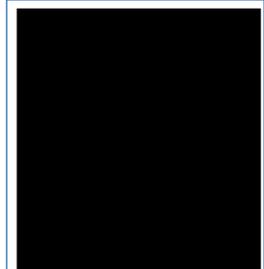


Luca Tiseni

Curriculum Vitae

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Personal information

Date of birth [REDACTED]
Place of birth [REDACTED]
Nationality Italian
Gender [REDACTED]

Research Experiences

- Oct 2019 – **Ph.D. in Emerging Digital Technologies, curriculum Perceptual Robotics.**, *Perceptual Robotics Lab, TeCIP Institute of Sant'Anna School of Advanced Studies.*, Pisa, Italy, Expected Thesis Defense: December 2022.
Research on soft exosuits and collaborative robotics for assistance to stroke and SCI patients, and industrial workers. Design of new exoskeleton devices and development of core exoskeleton technologies - actuators, sensors, ergonomic human-robot interfaces. Design and control of collaborative robotic platforms and haptic devices for remote telepresence. Development of service robots for railway monitoring and disinfection.
- Feb 2019 – **Research Assistant - Railway Robot Designer**, *Perceptual Robotics Lab, TeCIP Institute of Sant'Anna School of Advanced Studies.*, Pisa, Italy.
Topic: Design of a lightweight railway vehicle for autonomous railway inspection. Full aerodynamic and mechanical design from scratch using CAD and FE analysis software.

Education

- Oct 2013 – **Master's degree - honor student in Engineering.**, *Sant'Anna School of Advanced Studies, Pisa, Italy, 100/100 with honors.*
Holding a full scholarship awarded in a highly selective national competition (less than 5% candidates admitted), with the obligation to achieve high grades in University exams and attend additional courses as integration and extension of the regular academic schedule. The title is equivalent to a post-graduate degree course. Final thesis on "Design and Control of a series viscous elastic joint".
- Aug 2018 – **Visiting Master Student**, *University of Twente, Enschede, 7500 AE, The Netherlands.*
Nov 2018 Supervisor: Prof. Lorenzo Masia, Department of Biomechanical Engineering.
Thesis on "Design of a new prototype of shoulder exoskeleton".
- Oct 2016 – **Master's Degree in Mechanical Engineering**, *University of Pisa, Pisa, Italy, 110/110 with honors.*
Dec 2018 Graduation date: December 5th, 2018. Quotes Average: 29,9/30.
Thesis on "Design of a new prototype of shoulder exoskeleton".
- Oct 2013 – **Bachelor's Degree in Mechanical Engineering**, *University of Pisa, Pisa, Italy, 110/110 with honors.*
Oct 2016 Graduation Date: October 2016. Quotes Average: 28,3/30.
Thesis on "Efficiency Analysis of a multi tower solar array".
- 2008 – 2013 **High School Diploma**, *Scientific High School "Giacomo Leopardi", Recanati (MC), Italy.*
Graduation date: July 10, 2013
Grade: 100/100 with honors

Other Experiences

- Oct 2019 – **Member of Sant'Anna Team, ANA Avatar XPrize competition**, *Perceptual Robotics Lab, TeCIP Institute of Sant'Anna School of Advanced Studies, Pisa, Italy, Our team is in the Semifinals. Info.*
Building a full avatar robot for telepresence. Working on system integration, control, communication.

- Jan 2019 – **High School and Bachelor students tutor**, *Ripetizioni Pisa*, Pisa (PI), Italy.
- Dec 2019 One-to-one teacher in Structural Mechanics, Mechanics Applied to Machine, and Machine Component Design
- Oct 2016 – **Head of Passive Levitation Systems Development**, *Hyperloop Team Italia*, *Sant'Anna School of Advanced Studies*, Pisa (PI), Italy.
- Apr 2017 The Hyperloop Team Italia was a student team participating in the SpaceX Hyperloop Pod Competition II.

Publications

- Published **“A Twisted String, Flexure Hinges Approach for Design of a Wearable Haptic Thimble”** - *D. Leonardis, L. Tiseni, D. Chiaradia, A. Frisoli* - Published in *Actuators*, Vol. 10, No. 9, p. 211, Multidisciplinary Digital Publishing Institute.
- Published **“Design and Control of a Linear Springs-Based Rotary Series Elastic Actuator for Portable Assistive Exoskeletons”** - *L. Tiseni, G. Rinaldi, D. Chiaradia, A. Frisoli* - Published in *Proceedings of the 30th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN)*, 2021, pp. 434-439
- Published **“UV-C Mobile Robots with Optimized Path Planning: Algorithm Design and On-Field Measurements to Improve Surface Disinfection Against SARS-CoV-2”** - *L. Tiseni, D. Chiaradia, M. Gabardi, M. Solazzi, D. Leonardis, A. Frisoli* - Published in *IEEE Robotics & Automation Magazine*, vol. 28, no. 1, pp. 59-70, March 2021
- Published **“An Assistive Soft Wrist Exosuit for Flexion Movements With an Ergonomic Reinforced Glove”** - *D. Chiaradia, L. Tiseni, M. Xiloyannis, M. Solazzi, L. Masia, A. Frisoli*. - Published in *Frontiers in Robotics and AI*, 7, 182, 2021.
- Published **“Compact series visco-elastic joint (SVEJ) for smooth torque control”** - *D. Chiaradia*, L. Tiseni*, A. Frisoli*. - Published in *IEEE Transactions on Haptics*, vol. 13, no. 1, pp. 226-232, 2020.
- Published **“Design of a Twisted String Actuated Haptic Thimble for Cutaneous Force Feedback”** - *D. Leonardis, L. Tiseni, D. Chiaradia, A. Frisoli* - Published in *Proceedings of the International Conference of IFToMM Italy*, pp. 145-153, 2020.
- Published **“Nonlinear Characterization of a Compact Series Visco-Elastic Element for Tendon-Driven Actuation”** - *D. Chiaradia, L. Tiseni, D. Leonardis, A. Frisoli*. - Published in *Proceedings of the International Conference of IFToMM Italy*, pp. 378-385, 2020.
- Published **“On the Edge between soft and rigid: an assistive shoulder exoskeleton with hyper-redundant kinematics.”** - *L. Tiseni, M. Xiloyannis, D. Chiaradia, N. Lotti, M. Solazzi, H. van der Kooij, A. Frisoli, L. Masia*. - Published in *Proceedings of the 16th IEEE International Conference on Rehabilitation Robotics (ICORR)*, pp. 618-624 June 2019, Toronto.

Presentations and Conferences

- September 27th - **Chair of the Technical Session: “Motion and Path Planning I” and Paper Presentation**, *Prague, Czech Republic, Virtual Conference*.
- October 1st, 2021 I chaired the session and presented the paper “UV-C Mobile Robots with Optimized Path Planning: Algorithm Design and On-Field Measurements to Improve Surface Disinfection Against SARS-CoV-2”
- May 5th, 2021 **Poster presentation at the 10th International IEEE EMBS Conference on Neural Engineering 2021**, *Virtual Conference*.
I presented the abstract “Preliminary Design of an Assistive Shoulder and Elbow Exoskeleton for Stroke Patients Performing Activities of Daily Living.”
- June 26th, 2019 **Podium presentation speaker at the 16th IEEE International Conference on Rehabilitation Robotics 2019**, *Metro Toronto Convention Centre*, Toronto, Ontario, Canada.
I presented the paper “On the Edge between soft and rigid: an assistive shoulder exoskeleton with hyper-redundant kinematics” in the parallel session “Wearable Robotic Systems 1”.

Patents

- Application in progress **“Wheel of a vehicle for the inspection of a line railway.”** - *Eugenio Fedeli, Mirko Ermini, Mirco Gonnelli, Antonio Frisoli, Massimiliano Solazzi, Luca Tiseni, Daniele Leonardis, and Carlo Alberto Avizzano* - priority number 102020000031526 of 17/12/2020. 2021.

- Application in progress “**Mobile System for automatic inspection of the railway line with reduced wight and high speed.**” - *Eugenio Fedeli, Mirko Ermini, Mirco Gonnelli, Giuseppe Scaglione, Antonio Frisoli, Massimiliano Solazzi, Luca Tiseni, Daniele Leonardis, Carlo Alberto Avizzano, Dinojan Pedurupillai, and Massimo Satler.* - priority number 102020000031499 of 18/12/2020. 2021.
- Application in progress “**Vehicle and method for inspecting a line railway: drone control system.**” - *Eugenio Fedeli, Mirko Ermini, Mirco Gonnelli, Giuseppe Scaglione, Antonio Frisoli, Massimiliano Solazzi, Luca Tiseni, Daniele Leonardis, Carlo Alberto Avizzano, Dinojan Pedurupillai, and Massimo Satler.* - priority number 102020000031535 of 18/12/2020. 2021.
- Application in progress “**Control method of a mobile robotic disinfection apparatus of a environment and mobile robotic device for disinfection of an environment implementing this method.**” - *Antonio Frisoli, Massimiliano Gabardi, Daniele Leonardis, Domenico Chiaradia, Luca Tiseni, and Massimiliano Solazzi.* - priority number 102021000004727 of 1/3/2021. 2021.
- Published “**Apparatus Capable of Actuating a Distal Joint and Transferring the Constraining Reactions in an Underactuated Shoulder Exoskeleton.**” - *L. Masia, A. Frisoli, L. Tiseni, D. Chiaradia, M. Xiloyannis, M. Solazzi* - IT2019000010026A1; WO2020261167A1

Ph.D. Projects

- Development of a Python3 ROS Package for the high-level control and management of a wheeled robotic platform - [Source](#)
- Holonomic Robotic Platform control firmware development in C on ST microcontroller - [Source](#)
- Design of a holonomic robotic platform with Mecanum Wheels

Degree's Projects

- Design and simulation of a Computed Torque controller for a Delta Robot in Matlab Simulink
- CAD Design and FEM structural Analysis of a Delta Robot 3D Printer

Other Projects

- Development of an Expense Tracker Web App using Django and ReactJS - [Link](#)
- Development of a Desktop Calculator GUI using Python & PyQt5 - [Link](#)

Computer Skills

OS	Windows, Linux
Typesetting	MS Office, L ^A T _E X
Programming	Python 2.7 - 3.6+, C++, C, Bash, Git
Scientific	Matlab, Simulink, NumPy, SymPy, Matplotlib
Robotics	ROS, FreeRTOS, LWIP
MCU	ST, Arduino, Teensy
CAD	Creo Parametric, Solidworks
FEM	Ansys Workbench (Static, Modal, Fluent), Ansys APDL
Web	HTML5, CSS3, JavaScript, ReactJS, Django, SASS, Bootstrap 5
Database	PostgreSQL, SQLite3

Social and Technical Skills

Excellent teamwork, planning, and project management skills acquired during Bachelor, Master and Ph.D. projects. I can work flexibly and agile and meet deadlines without losing high quality standards. I am curious and always open to learning new things. I am capable of analyzing and understanding complex technical problems, and breaking them down into simpler problems. I look for simple and practical solutions when possible, I think out of the box when simple is not suitable.

Languages

Italian Native
English Excellent
French Basic

Hobbies

I love listening to music, and I play acoustic and electric guitar since I was 12 years old. Lately, I have also started to practice bass and drums.

I have been playing football since I was 7. I played in my hometown team until 18, now I play just for fun. My second sport is tennis.

References

Ph.D. Thesis and Master Thesis Advisor **Prof. Antonio Frisoli.**
Full Professor of Robotics at the Tecip Institute of the Scuola Superiore Sant'Anna of Pisa (IT).
E-mail: antonio.frisoli@santannapisa.it

Master Thesis Advisor **Prof. Lorenzo Masia.**
Full Professor in Medical Technology and Biorobotics, Head of "Medizintechnik" group, at Heidelberg University (Germany) at the Institute of Computer Engineering (ZITI).
E-mail: lorenzo.masia@ziti.uni-heidelberg.de

Sant'Anna School Tutor **Prof. Massimo Bergamasco.**
Full Professor of Perception at the Tecip Institute of the Scuola Superiore Sant'Anna of Pisa (IT).
E-mail: massimo.bergamasco@santannapisa.it

Date: 15/12/2021

