FRANCESCO GRELLA

EDUCATION

University of Genova, Italy *Feb 2023 - Today*
Research Fellow

University of Genova, Italy *Nov 2019 - Jan 2023*
PhD Fellow in Bioengineering and Robotics

Oxford Robotics Institute, Oxford, United Kingdom *July 2022 - October 2022*
Visiting PhD Student in Robotics

University of Genova, Italy *Oct 2017 - Oct 2019*
Master's degree in Robotics Engineering, Grade: 110/110

University of Genova, Italy *Sep 2014 - Oct 2017*
Bachelor's degree in Biomedical Engineering Grade: 101/110

Liceo Scientifico "E. Amaldi", Novi Ligure (AL), Italy *Sep 2009 - Jun 2014*
Scientific high school diploma

SKILLS

Languages:	Italian, English, Spanish
Programming:	C++, Python, Java, Javascript
Frameworks/Tools:	ROS, Tensorflow, PyTorch, Matlab, Simulink, LTSpice, Docker, Git VCS, CMake
Other skills:	Deep Learning Architectures, Robotic Software Architectures, Robot Manipulator Control

RESEARCH INTERESTS

Robot Control:	Task-based control, Admittance/Impedance control, Force control
Robot Perception:	Distributed Tactile Sensing, Bayesian State Estimation
Artificial Intelligence:	Deep Learning for Tactile Processing, Generative Modeling for Domain Transfer
Tactile Sensing:	FDM and Inkjet printed capacitive pressure sensors

PUBLICATIONS

Safe and Effective Collaboration With a High-Payload Robot: A Framework Integrating Novel Hardware and Software Modules
Grella F. et al.
IEEE Robotics Automation Magazine, 2023

Mathematical Model and Experimental Characterization of Vertically Stacked Capacitive Tactile Sensors
Staiano M., Baldini G., Grella F., Frascio M., Maiolino P., Cannata G.
IEEE Sensors Journal, 2023

Voluntary Interaction Detection for Safe Human-Robot Collaboration
Grella F., Albini A., Cannata G.
IEEE International Conference on Robotic Computing (IRC) 2022

Tactile-Based Human-Robot Collaboration: A Performance Analysis
Grella F., Canale R., Giovinazzo F., Albini A., Cannata G.
'Advances in System-Integrated Intelligence', Springer Nature - 2022

Exploiting Distributed Tactile Sensors to drive a robot arm to get through Obstacles
Albini A., Grella F., Maiolino P., Cannata G.
IEEE Robotics and Automation Letters (RA-L) 2021

A Novel Tactile Device for Safe Human-Robot Interaction in Industrial Scenarios
Grella F., Baldini G., Wang S.A., Sagar K., Albini A., Jilich M., Cannata G., Zoppi M.
Italian Conference on Robotics and Intelligent Machines (I-RIM) 2021

A Tactile Sensor-Based Architecture for Collaborative Assembly Tasks with Heavy-Duty Robots
Grella F., Canale R., Baldini G., Wang S.A., Sagar K., Albini A., Jilich M., Cannata G., Zoppi M.
IEEE International Conference in Advanced Robotics (ICAR), 2021

Exploring the Relationship between Robot Personality and User Engagement in Verbal Interactions: a Preliminary Study
Garello L., Grella F., Castagnetta S., Bruno B., Recchiuto C., Sgorbissa A.
17th IEEE Conference on Ubiquitous Robots, Kyoto, Japan, June 2020

PROJECTS

SestoSenso Horizon Europe Project *(http://sestosenso.eu/)* *Nov 2022 - Today*
Key role in following tasks:
- Hardware design and integration
- Data acquisition firmware design
- Sensor-based motion control algorithm design
- Software architecture design and implementation
- Dissemination (Deliverables, workshop organization)

CoLLaboratE H2020 Project *(https://collaborate-project.eu/)* *Nov 2019 - May 2022*
Key role in following tasks:
- Hardware design and integration
- Sensor integration
- Software architecture design and implementation

TEACHING ACTIVITIES

Teaching Assitant of the 'Embedded Systems' course *Academic year: 2023 - 2024*

Teaching Assitant of the 'Robot Dynamics and Control' course *Academic year: 2022 - 2023*

Teaching Assitant of the 'Flexible Automation' course *Academic year: 2022 - 2023*

Teaching Assitant of the 'Robot Dynamics and Control' course *Academic year: 2021 - 2022*

CO-SUPERVISED MASTER THESES

Vision-Based Control Strategy for Safe Human-Robot Collaboration *Academic year: 2019 - 2020*

Control Strategies for a Lower Limb Bipedal Hexoskeleton *Academic year: 2019 - 2020*

Computational Model for the Simulation of Deformable Cable Simulation *Academic year: 2019 - 2020*

Study and Implementation of a Real-Time and Fail-Safe Communication System for Tactile Sensors Networks *Academic year: 2019 - 2020*

Study and Implementation of Robot-Assisted Calibration Techniques for Robotic Skin *Academic year: 2019 - 2020*

Tactile-based Touch Classification and Detection for the Control of an Industrial Robot for Human-Robot Cooperative Tasks *Academic year: 2020 - 2021*

Trajectory Adaptation for Human Robot Interaction *Academic year: 2020 - 2021*

Robot Arm Catching a Flying Drone: Vision-based Control Strategies *Academic year: 2020 - 2021*