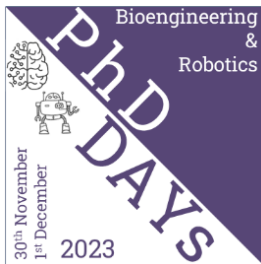# BioRob
PhD Days 2023

The BioRob PhD Days 2023 aim to create a stimulating environment for all the PhD students of the Bioengineering and Robotics doctorate. To introduce the new students to this 3-years travel, the Department of Informatics, Bioengineering, Robotics and Systems Engineering (DIBRIS) offer a full two-day program with plenty of opportunities for getting answers to (almost) all possible questions.

We want to put you on the right path for your PhD !!

The BioRob PhD Days 2023 foster the acquaintance among PhD students and facilitate contamination between knowledge and experiences in the different research fields that characterize the Bioengineering and Robotics doctorate.

For 2nd and 3rd year PhD students, the BioRob PhD Days 2023 are a unique occasion to present your research to your peers as well as to more experienced researchers.

This annual event will provide you with excellent opportunities, like:

- Networking with your peers
- Acquiring the tools for successful PhD
- Receiving tips and best practices from senior PhD candidates
- Presenting your research advancements with a poster presentation
- Discussing various topics with doctoral studies specialists and senior researchers

The BioRob PhD Days 2023 will be held at Aula San Salvatore (Piazza Sarzano 9), and Aula Benvenuto (Stradone S. Agostino 37) in the heart of the downtown of Genova.

Program

- **Thursday 30th November**

09.00 – Opening of the BioRob PhD Days 2023 (Aula San Salvatore)

09.20 – Institutional Greetings

- **Prof. Mario Marchese**, Vice-Rector for Doctoral Studies and Relations with Companies

- **Prof. Sergio Martinoia**, Head of the Department of Informatics Bioengineering, Robotics, and Systems Engineering (DIBRIS)

09.30 – PhD Bioengineering and Robotics organization

- **Prof. Paolo Massobrio**, coordinator of the PhD in Bioengineering and Robotics

10.30 – *Coffee break*

11.00 – Curricula presentation

- **Dr. Alessandra Sciutti**, reference of the *Cognitive Robotics, Interaction and Rehabilitation Technologies* curriculum

- **Dr. Ferdinando Cannella**, reference of the *Advanced and Humanoid Robotics* curriculum

- **Prof. Giorgio Cannata**, reference of the *Robotics and Autonomous Systems* curriculum

- **Dr. Giuseppe Vicidomini**, reference of the *Bionanotechnology* curriculum

- **Prof. Paolo Massobrio**, reference of the *Bioengineering* curriculum

11.45 – Educational training activities presentation

- **Prof. Maura Casadio**, reference of the teaching committee

12.00 – Final remarks and organization of the PhD poster sessions

12.15 – *Lunch*

14 .00 - Poster session #01 (Aula Benvenuto e Corridoio della Direzione)

Author	Poster title
Mattia Risiglione	Whole Body Control and Planning for Sequential Manipulation with Legged Manipulators
Abdelrahman Abdalla	An Efficient Paradigm for Feasibility gurantees in Legged Locomotion
Amatucci Lorenzo	Optimal control for legged robot
Daniel F O Apraez	On Discrete symmetries of robotic systems
Donatien Delehelle	Using differentiable simulation for Cloth state prediction with application to robotic manipulation
Federico Allione	Skippy, the Balancing and Hopping Robot
Miguel F Fernandes	Grapevine Winter Pruning Automation
Carlo Rizzardo	Learning Robotics Tasks with Minimal Real-World Data
Jamil Ahmad	AI-based Controller to Enhance the Capability and Performances of Industrial Exoskeletons to be Suitable for the Civil Construction Sector
Marcel G Lahoud	A Reinforcement Learning Framework for Real-Time Multi-Agent Manipulation Control of Collaborative Robots
Muhammad A Azam	Upper Aero Digestive Tract Cancer Diagnosis using Deep Learning Methods
Ylenia Nisticò	Multisensor State Estimation for Quadruped Robots
Marco Orrù	Advancing cardiac electrophysiology for the treatment of arrhythmias by signal processing and artificial intelligence
Giulia Parodi	Investigating the impact of excitation/inhibition balance in human iPSCs-derived neuronal networks during long-term development on MEAs
Andrea Andolfi	3D biofabrication techniques for neural tissue engineering
Francesca Callegari	Complementary in vitro and computational modelling for the investigation of interacting neuronal networks
Mattia Di Florio	Real-time closed-loop technologies for neuroengineering applications
Fabio Terranova	Innovative MEAs for in-vitro neurophysiology
Francesca Peveri	Interactive manipulation of visuomotor contingencies: a visual stimulation paradigm to investigate depth cues integration in static and dynamic conditions
Poggio Fabio	Advanced computational methods to explore the spontaneous and chemically-modulated dynamics in brain-on-a-chip models
Michela Bogliolo	Anthropomorphic technologies in bioengineering: relationship between form and function in prosthetics and humanoid robotics
Ilaria Parodi	Core-shell hydrogels to model the tumor microenvironment heterogeneity
Ala E F Merisani	Green and sustainable biomaterials: Edible bioplastic films and coatings from mushroom mycelium and plant biomass
Amirsoheil Honarbari	Design, Manufacture, and Development of Sustainable Printed Circuit Board
Davide Sangaletti	Novel Boronic Ester Cross-linkers and Biobased Vitrimers for Fibre-reinforced Composites
Francesca Basso	Collagen and gelatin-based functional hydrogel as potential drug delivery system for wound healing
Milad Safarpour	Fully biobased, biodegradable imine vitrimers derived from epoxidized soybean oil for food packaging applications.
Chiara Gnocchi	Zein based spray dried microparticles for active wound healing
Kumba B Bonga	Tuning of self-growing natural composite materials for the development of 3D constructs
Francesca Cocchella	The Social Cognition of robots: Interdisciplinary Study of group-robot interaction
Sara Incao	An epistemological and operational framework for an artificial self in Human-Robot Interaction
Laura Triglia	Mutual Trust and Anthropomorphisms: the most impact in HRI
Matilde Antonj	Adaptive robots: modelling the role of prior experience in human perceptual, motor and attentional mechanisms
Giulia Pusceddu	Exploring Group Dynamics and Adaptive Robot Behavior in Human-Robot Interaction
Giada Lombardi	Investigating the role of vitality forms in human-human and human-robot interactions
Angelica Ginnante	Optimized design, analysis and kinematic control of highly redundant serial robotic arms
Andrea Tiranti	Motion optimization strategy for passive acoustic monitoring with a team of AUVs considering intermittent communication
Federico Vasile	Vision-based prosthesic grasping

17 .00 End of the 1st Day

Università di Genova

DIBRIS DIPARTIMENTO
DI INFORMATICA, BIOINGEGNERIA,
ROBOTICA E INGEGNERIA DEI SISTEMI

Bioengineering
&
Robotics
PhD DAYS
30th November
1st December
2023

- **Friday 1st December**

09.00 – Opening of the second day (Aula Benvenuto)

09.15 – Histories of "old BioRob PhD students"

- **Dr. Simonluca Piazza**, BioRob phd student 30th cycle, CEO and co-founder of "Genoa Instruments".

- **Prof. Andrea Spanu** BioRob phd student 27th cycle, assistant professor of Bioengineering @ IUSS Pavia

10.15 – *coffee break*

10.45 - Poster session #02 (Aula Benvenuto e Corridoio della Direzione)

Author	Poster title
Doganay Sirintuna	Adaptive Approaches for Collaborative Mobile Manipulation
Elena Merlo	Robot Intuitive Programming through Video-Based Scene Interpretation and Planning
Idil Ozdamar	Collaborative Loco-manipulation through Pulling and Pushing Actions
Nicholas Cartocci	Data processing using ML techniques for fall detection and prevention
Chiara Baldini	AI Systems for Laryngeal Cancer Screening, Diagnosis, and Margin Assessment
Shunlei LI	AI Techniques for Medical Diagnosis and Laser Microsurgery
Ajay Gunalan	Computational Sensing for ISM & OCT-Guided Laser Microsurgery
Federico Ceola	Fast and Efficient Objects Perception and Manipulation for Robotics
Gabriele M Caddeo	Visuo-haptic integration for object manipulation and perception
Stefano Bernagozzi	From Markov Decision Processes to Behaviour Trees
Andrea Maracani	Knowledge Transferability for Data-Efficient Deep Learning
Francesco Roscia	Towards Safe and Stable Landing Control for Quadruped Robots
Stefano Berti	Making Robots Understand Humans
Cecilia Beccari	Development of an experimental platform to explore electro-mechanical properties of in-vitro cardiac models
Laura Bandini	Partner representation in competitive scenarios
Maria G Canu	Brain dynamics: inside physiological and pathological sleep
Ilaria D della Lunga	Unconventional Electrical Stimulation in In Vitro Neuronal Cultures: From Simple Models to Pathological Insights
Katarzyna A Dziza	Application of graphitic carbon nitride nanosheets as a multifunctional nanofiller in cryogels for wastewater treatment and quality monitoring
Guy Aoun	Characterization of internal ribosome entry sites (IRES) in circular RNAs
Alessio Boschi	Interferometric biosensor for high sensitive label-free recording of HiPS cardiomyocytes contraction in-vitro
Indya Ceroni	Electromyographic characterization of upper limb 3D movements for the development of new rehabilitative solutions
Sara Mongile	Designing a Cognitive Architecture for Adaptive Human-Robot Interactions
Marco G Fedozzi	Learning to Think Like Humans: Simulation Theory in Cognitive Robotics for Emergent Intention Prediction
Giulia S Azzarà	How Shared Perceptions Change in Space During HRI

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Università di Genova

Mattia Barbieri	An Analysis of Ocular Movements in Simuletd Low Vision Condition with Extended Reality
Marco Matarese	XAI in HRI: A Journey to the Center of Explainability
Ahmet B Kurt	Perception of dynamic stimuli: towards a new methodology for scotoma
Anna Vitale	The role of visual-tactile integration in the perception of orientation
Carolina Tammurello	The role of vision in the development of multisensory and bodily perception
Alice Nardelli	Personality-based Memory-Architecture for Human Robot Interaction
Alessio Capitanelli	Keep the planner in the loop: parallel planning and execution using LLM
Mohamad Shaaban	Digital Twins For HRC
Simone Macciò	Mixed Reality for Efficient Communication in Human-Robot Collaboration

13.00 - *Lunch*

14.00 - Poster session #03 (Aula Benvenuto e Corridoio della Direzione)

Author	Poster title
Lorenzo Dal Verme	Non-Linear Control of Cable-Driven Manipulators
Pouya A Sadabad	Bio-Inspired Spiking Neural Network of Peri-Personal space and Body-Schema
Vasco Fanti	Development and Assessment of an Active and Biomimetic Exoskeleton to Assist Construction Workers by Reducing the Biomechanical Loads on the Trunk and Shoulders
Lizhou Xu	Robotic Assembly System with Uncertainties Balancing
Farshad Nozad Heravi	Develop and Control of a Rigid-Flexible Manipulator
Jin Wang	Autonomous Humanoid Manipulation
Jingcheng Jiang	Modelling and Compensation for Transmission Error of Timing Belt in Legged Robots
Ioannis Dadiotis	Motion planning and control for quadruped mobile manipulators
Maolin Lei	Mr
Damiano Gasperini	An AI based framework for robot awareness
Alessio De Luca	Autonomous loco-manipulation for hybrid wheeled-legged robots in cluttered and unknown environments
Andrea Patrizi	Motion planning and control for Hybrid Locomotion of Wheeled-Legged Systems
Davide Torielli	Intuitive Interfaces Leveraging Autonomy Features for the Control of Complex Mobile Manipulators
Andrea Rosasco	Robot Perception for Human-Robot Collaborative Tasks
Alberto Neri	Surgical Augmented Reality
Fulvio Missoni	How do we perceive the space in the real word?
Giorgia Zanini	In vitro modulation of human induced-pluripotent stem cell derived neural network dynamics coupled to Micro-Electrodes Arrays
Federico Ferracini	Assessing and treating binocular sensorimotor disorders in natural settings.
Giacomo Garrè	Background removal in ISM through maximum likelihood estimation
Francesco Fersini	Optical aberration encoding and decoding for Image Scanning Microscopy
Sanket Patil	Open-Source Hardware and Software Active Stabilization for Super Resolution Microscopy
Sabrina Zappone	Deciphering the effect of RNA on alpha-synuclein phase separation with fluorescence fluctuation spectroscopy
Irene Guerriero	Rational design of a multi-compartmentalized conformable implant for Brain Cancer
Gloria Calafatello	Development of multisensory spatial representation in infants and toddlers
Helene Vitali	Developmental impact of visual impairment and sleep on neural processing underlying multisensory interaction
Jessica Bertolasi	Perceptual correlates of psychosis: study of visual time perception in healthy subjects and psychiatric patients

Maria C Palacios	Cross-modal perception and deprivation
Marta Guarischi	The facets of attention. How attention pervades our senses
Stefania Petri	How visually impaired infants and children interact with their surrounding space: a study to develop a new multisensory device for early rehabilitation
Lucrezia Grassi	A Cloud System for Diversity-Aware, Situated, Multi-Party Autonomous Interaction Between Humans and Robots
Valerio Belcamino	Advanced Robot Manipulation Skills Acquired via Human Demonstration
Francesco Giovinazzo	ProxySkin: a multi-modal sensing architecture fos Safe Human-Robot Collaboration
Andrea Delbene	Formation and Recovery Techniques for a Multi-UAV and Payload System

16.30 - End of the BioRob PhD Days

- Closing remarks

- Next significant events for 1st,2nd and 3rd year PhD students