europass Curriculum Vitae

PERSONAL INFORMATION

Valerio Modugno

CURRENT POSITION

From September 2024

Associate Lecturer in Robotics & AI

University College London (UCL)

Taught courses: ML for robotics, Estimation and Control, Control 2, designing Sensor systems, Modelling and Designing Embedded Systems
Fields of Research: Legged Robots, RL, Safe Learning for Control, Robust Planning and Control, Aerial robotics, Underwater Robotics, robotics for ecology

EDUCATION

Apr 2022 – Sep 2024

Senior Research Fellow

University College London (UCL)

Fields of Research: Legged Robots, RL, Safe Learning for Control, Robust Planning and Control

Sep 2017 – Mar 2022

Research Fellow

Sapienza University of Rome

Fields of Research: Robotics, Control Theory, Machine Learning

Nov 2013 – Sep 2017

Ph.D in ABRO (Automatica, Bioingegneria e Ricerca Operativa)

Sapienza University of Rome

Thesis: Learning Safe Controller for Motion Generation in Redundant Robot
Principal Subjects: Robotics, Control Theory, Machine Learning, Stochastic Black-Box Optimization, Whole-Body Control for Humanoids

Apr 2015 – Dec 2016

Visiting Researcher at Larsen Group, INRIA Grand-Est Nancy

Local Supervisor: Researcher Serena Ivaldi

Sep 2014 – Mar 2015

Visiting Researcher at Intelligent Autonomous System group, TU Darmstadt

Local Supervisor: Researcher Serena Ivaldi

Mar 2009 – Oct 2013

Master's Degree in Control Engineering

110/110 cum laude

Sapienza University of Rome

Thesis: A Stochastic Learning Approach for Vision-Based Grasping
Principal Subjects: Nonlinear Systems, Control Theory for Linear and Nonlinear Systems, Optimal Control, Adaptive and Robust Control, Robotics, Computer Vision, and Machine Learning.
Projects: implementation of a visual ego-motion system for a monocular camera
implementation of a visual-based tracking system for mobile robots
implementation of a system for Structure from Motion
implementation of an automatic trading system through Granular Computing techniques

Set 2011 – Mar 2012

LED (Luiss Entrepreneurship for Development)

Luiss Business School

Principal Subjects: General management, Business Planning, Business Modelling, Business Financing

Set 2005 – Mar 2009

Bachelor's Degree in Control Engineering

110/110 cum laude

Sapienza University of Rome

Thesis: Motion Planning for Redundant Robots with Assigned End-Effector Path
Principal Subjects: Linear System, Base Control Theory, Operating System, Robotics, Programming, Electronics, Industrial Automation,
Project: control of electric motor through PIC microcontroller

Set 2000 – Jul 2005

High School Diploma

100/100

Liceo Scientifico Statale "Nomentano" Roma

ACADEMIA INFORMATION

Teaching

- **2024-2025 ML for robotics, Estimation and Control, Control 2, designing Sensor systems, Modelling and Designing Embedded Systems**
- **2019-2023 Teaching Python programming, clustering computing, parallel computing, and web scraping for the postgraduate course "Big Data and Statistical Methods for the Knowledge Society"**
- **2019-2021 Teaching the course "Control System Theory" for undergrad students at Uninettuno University**
- **teaching assistant 2023-2024 for the course "Modelling and Designing Embedded Systems" at UCL, London, UK**
- **teaching assistant 2018-2019 for the course of "Operative Research" at Ecole des Mines, Nancy, France**

Grants

- **Recipient of The "Sapienza Starting Research Grant 2021" for the project: a flexible approach for the automatic disassembly of electronic appliances using robotic arms**

Qualification

- **Recipient of the French scientific national qualification in 2020 (which is required to become a lecturer in France)**

Editorial Activities

- **Guest Editor of the RA-L Special Issue "Learning for Safe and Robust Control"**
- **Associate Editor for ICRA 2024,2025**
- **associated editors Humanoids 2024**
- **Local chair for Humanoids 2024**

Publications

IROS 2024

- On the Benefits of GPU Sample-Based Stochastic Predictive Controllers for Legged Locomotion, G Turrisi, V Modugno, L Amatucci, D Kanoulas, C Semini
- Local navigation among movable obstacles with deep reinforcement learning, L Yao, V Modugno, Y Liu, D Stoyanov, D Kanoulas

LCSS 2024

- Active Sensing for Data Quality Improvement in Model Learning, O. Napolitano, M. Cognetti, L. Pallottino, D. Kanoulas, P. Salaris, V. Modugno

ICRA 2024

- Transformer-Based Prediction of Human Motions and Contact Forces for Physical Human-Robot Interaction, A. Fusco, V. Modugno, D. Kanoulas, A. Rizzo, M. Cognetti

HUMANOIDS 2023

- ViT-A*: Legged Robot Path Planning using Vision Transformer A*, J. Liu, S. Lyu,, D. Hadjivelichkov,V. Modugno, D. Kanoulas

ACCESS 2023

- *Navigation Among Movable Obstacles via Multi-Object Pushing Into Storage Zones*, K. Ellis; D. Hadjivelichkov; V. Modugno; D. Stoyanov; D. Kanoulas

RAL 2023

- *Learning Needle Pick-And-Place without expert demonstrations*, R Bendikas, V Modugno, D Kanoulas, F Vasconcelos, D Stoyanov

I-RIM 2021

- *Identification of Robot Dynamics from Motor Currents/Torques with Unknown Signs*, M. Pennese, C. Gaz, M. Capotondi, V. Modugno, A. De Luca (**Winner of the best student paper award**)

RAL 2021

- *Bayesian neural network modeling and hierarchical mpc for a tendon-driven surgical robot with uncertainty minimization*, F Cursi, V Modugno, L Lanari, G Oriolo, P Kormushev
- *On-Line Learning for Planning and Control of Underactuated Robots with Uncertain Dynamics*, G. Turrisi, M. Capotondi, C. R. Gaz, V. Modugno, G. Oriolo, A. De Luca

IROS 2020

- *Model Predictive Control for a Tendon-Driven Surgical Robot with Safety Constraints in Kinematics and Dynamics*, F. Cursi, V. Modugno, P. Kormushev

IFAC 2020

- *Enforcing Constraints over Learned Policies via Nonlinear MPC: Application to the Pendubot*, G. Turrisi, B. Barros Carlos, M. Cefalo, V. Modugno, L. Lanari, G. Oriolo

RAL 2020

- *Learning Robust Task Priorities and Gains for Control of Redundant Robots*, L. Penco, E. Mingo Hoffman, V. Modugno, W. Gomes, J.B. Mouret, S. Ivaldi

ICRA 2020

- *ZMP constraint restriction for robust gait generation in humanoids*, F.M. Smaldone, N. Scianca, V. Modugno, L. Lanari, G Oriolo

RAM 2019

- *A Multimode Teleoperation Framework for Humanoid Loco-Manipulation:A Demonstration Using the iCub Robot*, L. Penco, N. Scianca, V. Modugno, L. Lanari, G. Oriolo, S. Ivaldi

CORL 2019

- *An Online Learning Procedure for Feedback Linearization Control without Torque Measurements*, M. Capotondi, G. Turrisi, C. Gaz, V. Modugno, G. Oriolo, A. De Luca

HUMANOIDS 2019

- *Humanoid Whole-Body Movement Optimization from Retargeted Human Motions*, W. Gomes, V. Radhakrishnan, L. Penco, V. Modugno, J.B. Mouret, S. Ivaldi

- *Gait Generation using Intrinsically Stable MPC in the Presence of Persistent Disturbances*, F. M. Smaldone, N. Scianca, V. Modugno, L. Lanari, G. Oriolo

HUMANOIDS 2018

- *Robust Real-time Whole-Body Motion Retargeting from Human to Humanoid*, L. Penco, B. Clement, V. Modugno, E. Mingo Hoffman, G. Nava, D. Pucci, Nikos G. Tsagarakis, J.-B. Mouret, S. Ivaldi
- *Learning robust task priorities of QP-based whole-body torque-controllers*, Marie Charbonneau, Valerio Modugno, Francesco Nori, Giuseppe Oriolo, Daniele Pucci, Serena Ivaldi

HUMANOIDS 2017

- *Safe trajectory optimization for whole-body motion of humanoids*, V. Modugno, G. Nava, D. Pucci, F. Nori, G. Oriolo, S. Ivaldi
- *Gait generation via intrinsically stable MPC for a multi-mass humanoid model*, N. Scianca, V. Modugno, L. Lanari, G. Oriolo

HUMANOIDS 2016

- *Learning Soft Task Priorities for Safe Control of Humanoid Robots with Constrained Stochastic Optimization*, V. Modugno, U. Chervet, G. Oriolo, S. Ivaldi

ICRA 2016

- *Learning soft task priorities for control of redundant robots*, V. Modugno, G. Neumann, E. Rueckert, G. Oriolo, J. Peters, S. Ivaldi

IJJCI 2014

- *Combining Piecewise Linear Regression and a Granular Computing Framework for Financial Time Series Classification*, V. Modugno, F. Possemato, A. Rizzi
- *Information Granules Filtering for Inexact Sequential Pattern Mining by Evolutionary Computation*, E. Maiorino, F. Possemato, V. Modugno, A. Rizzi

Social Robotics 2016

- *One-Shot Evaluation of the Control Interface of a Robotic Arm by Non-experts In book Social Robotics*, S. Marichal A. Malaisé, V. Modugno, O. Dermy, F. Charpillet, S. Ivaldi

Book chapter

Computational Intelligence 2016

- *Noise Sensitivity of an Information Granules Filtering Procedure by Genetic Optimization for Inexact Sequential Pattern Mining*, E. Maiorino, F. Possemato, V. Modugno, A. Rizzi

Summer School

Regularization Method for Machine Learning by IIT, Genova 30 Jun - 4 Jul 2014
Online Learning Summer School by Copenhagen University, Copenhagen 28 Jun 2015 - 2 Jul 2015

WORK EXPERIENCE

Jul 2011 – Mar 2012 — Cofounder of no Profit Organization "Giovani Roma 2020"

Mar 2009 – Aug 2009 — Website developer for UTRI (now Leonardo Group)

PERSONAL SKILLS

Mother tongue: Italian

Other languages

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1
French	A2	A2	A2	A2	A2

Computer skills / Technical skill	Deep knowledge of Kinova Jaco arm Good knowledge of Kuka IIWA arm, LWR, Panda arm deep knowledge of B1, A1, GO1, Spot quadrupedal robots deep knowledge mocap systems Phasespace, optitrack Programming Language: C, C++, python, java, Matlab scripting, R scripting, PHP, javascript Simulator: OpenRAVE, Gazebo, CoppeliaSim, Dart, OpenAI gym, Isaac sim, Brax Library: OpenCV, GSL, CVD, R library, OpenGL, PCL, OpenAI Baseline, TensorFlow, PyTorch, Jax, Casadi, Acados, ROS good knowledge of markup languages and stylesheets good knowledge of Office Framework and Latex good knowledge of CMS (Drupal, Joomla) good knowledge of Net Protocols good knowledge of Microcontroller Programming Operating System: Linux (different distribution), Windows, and iOS
Communication skills	Good communication and group interaction skills. Good teaching skills.
Organizational/managerial skills	Good flexibility and adaptability. Good project management ability, acquired by supervising master's and Ph.D. students.
Driving license	B