

PERSONAL INFORMATION

Valerio Modugno

CURRENT POSITION

From April 2022

Research Fellow

University College London

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

EDUCATION

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, 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 Degree in Control Engineering110/110 cum
laude

Sapienza University of Rome

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

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 Degree in Control Engineering

110/110 cum
laude

Sapienza University of Rome

Thesis: Motion Planning for Redundant Robot 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

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

Publications

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

IJCI 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

Book chapter

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. Charpillat , S. Ivaldi

Summer School

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

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 Finmeccanica 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
Programming Language: C, C++, python, java, Matlab scripting, R scripting, PHP, javascript
Simulator: OpenRAVE, Gazebo, CoppeliaSim, Dart, OpenAI gym, Isaac sim
Library: OpenCV, GSL, CVD, R library, OpenGL, PCL, OpenAI Baseline, Tensorflow, PyTorch, Jax, Casadi, Acado
good knowledge of markup languages and stylesheet
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 ability to manage projects, acquired by supervising master student projects.

Driving license

B

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".//La sottoscritto/a dichiara di essere consapevole che il presente curriculum vitae sarà pubblicato sul sito istituzionale dell'Ateneo, nella Sezione "Amministrazione trasparente", nelle modalità e per la durata prevista dal d.lgs. n. 33/2013, art. 15.