Michele Cipriano
cipriano@diag.uniroma1.it

Education

2020–*Current* **Sapienza University of Rome**, *Rome*, Italy.
- PhD in Automatic Control, Bioengineering and Operations Research (ABRO)
- Supervisor: Giuseppe Oriolo

2016–2020 **Sapienza University of Rome**, *Rome*, Italy.
- MSc in Artificial Intelligence and Robotics, *110/110 cum laude*
- Thesis: "Planning and Executing Humanoid Gaits in a World of Stairs"
- Supervisor: Giuseppe Oriolo

2015–2016 **University of Leeds**, *Leeds*, United Kingdom.
- Erasmus+ student in Computer Science

2013–2016 **University of Parma**, *Parma*, Italy.
- BSc in Computer Science, *109/110*
- Thesis: "Study and Experimentation of Hand Detection Technique with Deep Learning Algorithms"
- Supervisor: Federico Bergenti

Research

2023–*Current* **Visiting PhD Student at IDH Team, LIRMM**, *Montpellier*, France.
Study and development of loco-manipulation algorithms for the BAZAR dual-arm mobile robot.

2020–*Current* **PhD Student at Sapienza University of Rome**, *Rome*, Italy.
Studying humanoid robot planning and control in dynamic and uneven environments. Developing a navigation stack for humanoids in 3D with support to different localization, mapping, planning and control modules.

2020 **Research Fellow at Sapienza University of Rome**, *Rome*, Italy.
Studying humanoid robot locomotion and developing footstep planning algorithms working in both known and unknown dynamic rough environments.

Teaching

2020–*Current* **Autonomous and Mobile Robotics**, *Sapienza University of Rome*.
Final project supervisor of the module *Autonomous and Mobile Robotics* of the *Master in Artificial Intelligence and Robotics* and *Master in Control Engineering*. A selected list of supervised projects:
- A navigation stack for a skid-steering mobile robot
- Autonomous humanoid navigation in multi-floor environments
- Safe robot navigation in crowds with TIAGo
- Optimal kinodynamic planning for nonlinear hybrid systems
- Autonomous humanoid navigation in large-scale environments
- Planning parking maneuvers for a car-trailer vehicle
- Improving footstep planning algorithms by efficient nearest neighbor searching

2022–*Current* **Controlli Automatici**, *Sapienza University of Rome*.
Development of teaching material for the module *Controlli Automatici* of the *Bachelor in Computer and System Engineering*:
- Motion control algorithms in C++, MATLAB and CoppeliaSim for the P3DX wheeled mobile robot

Publications

Journals

2023 **M. Cipriano, P. Ferrari, N. Scianca, L. Lanari, G. Oriolo**, Humanoid Motion Generation in a World of Stairs, Submitted to *Robotics and Autonomous Systems*.

Projects

2023–*Current* **Loco-Manipulation Algorithms for Dual-Arms Mobile Robots**, *PhD Research Project*.
Development of NMPC algorithms for planning and control of the BAZAR dual-arm mobile robot. This project is part of the work made in IDH Team at LIRMM (Montpellier, France) and its development is currently ongoing.

2020–*Current* **Humanoid Navigation in an Unknown World of Stairs**, *PhD Research Project*.
A C++ framework for humanoid navigation built upon ROS. It provides a set of sensor-based anytime footstep planners, MPC for trajectory generation and support to localization and mapping modules for navigation in both known and unknown dynamic environments. This project extends the master thesis and its development is currently ongoing.

Jan 2020 **Planning and Executing Humanoid Gaits in a World of Stairs**, *Master's Degree Thesis*.
Development of a pipeline for humanoid robot locomotion in unknown environments using terrain mapping, footstep planning and variable height MPC. The project has been developed in C++ and Python using ROS and the B-Human framework. Experiments have been performed on a NAO humanoid robot. It has been presented as final project for the *Master Degree in Artificial Intelligence and Robotics* at Sapienza University of Rome, Italy.

Mar 2019 **Planar Monocular SLAM**, *Probabilistic Robotics Project*.
A graph-based SLAM C++ implementation of a total least squares algorithm on a planar robot equipped with a monocular camera. The project has been presented as final project for the *Probabilistic Robotics* module at Sapienza University of Rome, Italy.

Feb 2019 **HRP4 Torso Pose Estimation**, *Robotics Project*.
Implementation of an EKF-SLAM module for the HRP4 humanoid robot to estimate the pose of the torso using joint encoders, the IMU and an RGBD camera. The project has been developed in C++ using V-REP for simulating the environment. It has been presented as final project for the *Autonomous and Mobile Robotics* and *Robotics 2* modules at Sapienza University of Rome, Italy.

Programming Knowledge

Languages C++, Python, MATLAB, LaTeX.

Libraries ROS, Eigen, GridMap. Experience with ROS2, Pinocchio and CasADi.

Tools git, Make, CMake, catkin, Gazebo, CoppeliaSim.

Awards

2018 **Robothon Intesa Sanpaolo Make it Real**, *First Place*.
Winner of the hackathon organized by Intesa Sanpaolo Innovation Center. The project consisted in programming the robot Pepper to make it interact with customers of Euronics stores.

2016 **Best Software Engineering Project**, *First Place*.
Winner of the best software engineering project for the module *Software Engineering* at University of Leeds. The project (*Risotto: A Restaurant Management System*) has been selected by Elder Studios.

2011-2012 **Italian Olympiads in Informatics**, *Bronze Medal*.
Bronze medal at Italian Olympiads in Informatics (2011). Two stages of preparation for International Olympiads in Informatics (December 2011 and February 2012). Finalist at Italian Olympiads in Informatics (2012).

Summer School

Jul 2022 **Summer School SIDRA 2022**, *Bertinoro*, Italy.
- *Nonlinear and Adaptive Control Techniques for Advanced Aerospace Systems*
- *Network Systems in Science and Technology*

Jul 2021 **Summer School SIDRA 2021**, *Bertinoro*, Italy.
- *Game Theory and Network Systems*
- *Modeling and Control of Soft Robots*

Languages

Italian **Mother tongue**

English **Professional knowledge**

Personal Information

LinkedIn `https://www.linkedin.com/in/michelecipriano/`

GitHub `https://github.com/micco00x`

Website `https://micco00x.github.io/`