



# Caio Conti Guidote Ribeiro

MSc Student in Computer Science - Robotics



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## Education

### Federal University Of Minas Gerais (UFMG)

#### MSc in Computer Science - GPA 98/100

Relevant coursework: Robot Dynamics and Control, Reinforcement Learning, Natural Computation.

Belo Horizonte, Brazil

Aug 2023 - July 2025  
(expected)

### Federal University Of Minas Gerais (UFMG)

#### Diploma in Automation and Control Engineering - GPA 86/100

Relevant coursework: Mobile Robots, Robotic Manipulators, Control Engineering, Real-Time Automation.

Belo Horizonte, Brazil

Nov 2017 - Jul 2023

### Rhine-Waal University of Applied Sciences (HSRW)

#### Exchange Student, enrolled in Mechatronics Engineering

Coursework: Bioinspiration, Evolutionary Algorithms, Scientific Methods, Leadership, Cross-Cultural Management and Creativity.

Rhein-Waal, Germany

Sept 2022 - Feb 2023

## Experience

### Laboratory of Computer Vision and Robotics (VeRLab), UFMG

#### Graduate Researcher

- Social Navigation and Transportation for Mobile Manipulator Robots.
- Dubins Orienteering Problem variants. Second author [paper](#).
- Technical Skills:** MATLAB, Python, ROS, RRT, Reinforcement Learning, Navigation Stack.

Belo Horizonte, Brazil

Aug 2023 - Present

### Laboratory of Computer Vision and Robotics (VeRLab), UFMG

#### Undergraduate Volunteer Researcher

- Path design for a cooperative ground and aerial vehicle system.
  - First author [paper](#) published at [LARS 2022](#).
  - Awarded as one of the conference's Top 15 Papers.
- Path-planning for multi-robot systems with connectivity constraints.
- Technical Skills:** Python, ROS, Genetic Algorithms, MoveIt.

Belo Horizonte, Brazil

Nov 2021 - Aug 2023

### Evolutionary Computation Laboratory, UFMG

#### Undergraduate Fellowship Researcher

- Evolutionary methods for optimizing the design of power distribution lines.
- Software development, designing graphical interfaces and generating reports.
- Technical Skills:** Evolutionary Algorithms, Java.

Belo Horizonte, Brazil

Dec 2020 - Jul 2021

### AVANT, UFMG

#### Electronic & Software Division Member / Manager

- [AVANT UFMG](#) is a student-composed team that works with autonomous drones.
- Electronic assembly, control, computer vision, navigation and path planning for aerial vehicles.
- From 2019 to 2020 served as Manager.
- Participated in the [Brazilian Robotics Competition](#) - Petrobras Robotic Challenge 2020
  - Responsible for autonomous search and navigation.
- Technical Skills:** ROS, C++, Python, Arduino, Pixhawk, A\*.

Belo Horizonte, Brazil

Nov 2017 - Nov 2020

## Scholarships and Awards

### 2024 Inclusion Fellow at RSS 2024

Fellowship to attend the conference Robotics: Science and Systems (RSS)

### 2023 Academic Excellence Program (PROEX) Scholarship

Four-year CAPES/PROEX MSc scholarship funded by the Brazilian Government.

### 2022 Top 15 Best Papers Award

IEEE Latin American Robotics Symposium (LARS)

### 2022 Ambassador Grant of Rhine-Waal University for Applied Sciences

One semester long, funded by the German Academic Exchange Service (DAAD).

### 2020 Research Scholarship

One semester long, funded by the state electric company CEMIG Distribuição S.A.

## Skills

**Languages:** Portuguese (Native), English.

**Programming:** C, C++, Python, MATLAB.

**Technologies:** ROS, Git, LaTeX.

**Hardware:** Arduino, Raspberry Pi, Pixhawk.

**Overall:** A\*, RRT, Genetic Algorithms, Reinforcement Learning, Navigation Stack, QgroundControl, Ardupilot

## Publications

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### **Collaborative UGV/UAV Path Planning for Inventory Management in Warehouses**

Caio C. G. Ribeiro, Leonardo H. M. C. Santos, and Douglas G. Macharet

In 2022 Latin American Robotics Symposium (LARS), 2022 Brazilian Symposium on Robotics (SBR), and 2022 Workshop on Robotics in Education (WRE), 2022. ([paper link](#)).

### **Variable-Speed Dubins Orienteering Problem**

L. C. Vinicius Faria, C. G. Caio Ribeiro, and Douglas G. Macharet

In 2024 Latin American Robotics Symposium (LARS), 2024. ([paper link](#))

## Papers under review

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### **Communication Backbone Reconfiguration with Connectivity Maintenance**

Leonardo Santos, Caio C. G. Ribeiro, and Douglas G. Macharet

Under review to IEEE Latin America Transactions. arXiv preprint arXiv:2409.16851 (2024). ([paper link](#))

### **Socially-aware Object Transportation by a Mobile Manipulator in Static Planar Environments with Obstacles**

Caio C. G. Ribeiro, Leonardo R. D. Paes, and Douglas G. Macharet

Under Review to International Conference on Robot and Human Interactive Communication (RO-MAN) (2025). ([preview](#))

### **Beyond the Plane: A 3D Representation of Human Personal Space for Socially-Aware Robotics**

Caio C. G. Ribeiro, and Douglas G. Macharet

Under Review to International Conference on Robot and Human Interactive Communication (RO-MAN) (2025). ([preview](#))

## Recent Achievements

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#### 2025 **Founding Member of Brazilian Society of Robotics**

*Founding member of the recently founded Sociedade Brasileira de Robótica (SBR) - nº 30704640*

#### 2024 **Inclusion Fellow at RSS 2024**

*Fellowship program to attend the conference Robotics: Science and Systems (RSS), held in TU-Delft*

#### 2024 **Second-author in Accepted Paper**

*Variable-Speed Dubins Orienteering Problem at 2024 Latin American Robotics Symposium (LARS)*