Caio Conti Guidote Ribeiro

MSc Student in Computer Science - Robotics

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Education

Federal University Of Minas Gerais (UFMG) — *Belo Horizonte, Brazil*
MSc in Computer Science - GPA 98/100 — *Aug 2023 - Present*
Relevant coursework: Robot Dynamics and Control, Reinforcement Learning, Natural Computation.

Federal University Of Minas Gerais (UFMG) — *Belo Horizonte, Brazil*
Diplom in Automation and Control Engineering - GPA 86/100 — *Nov 2017 - Jul 2023*
Relevant coursework: Mobile Robots, Robotic Manipulators, Control Engineering, Real-Time Automation.

Rhine-Waal University of Applied Sciences (HSRW) — *Rhein-Waal, Germany*
Exchange Student, enrolled in Mechatronics Engineering — *Set 2022 - Feb 2023*
Coursework: Bioinspiration, Evolutionary Algorithms, Scientific Methods, Leadership, Cross-Cultural Management and Creativity.

Experience

Laboratory of Computer Vision and Robotics (VeRLab), UFMG — *Belo Horizonte , Brazil*
Graduate Researcher — *Aug 2023 - Present*
- Social Navigation and Transportation for Mobile Manipulator Robots (project link).
- Dubins Orienteering Problem variants (project link).
  - Second author paper.
- **Technical Skills:** MATLAB, Python, ROS, Reinforcement Learning.

Laboratory of Computer Vision and Robotics (VeRLab), UFMG — *Belo Horizonte , Brazil*
Undergraduate Volunteer Researcher — *Nov 2021 - Aug 2023*
- Path design for a cooperative ground and aerial vehicle system (project link).
  - First author paper published at LARS 2022. Awarded as one of the conference's Top 15 Papers.
- Path-planning for multi-robot systems (project link).
  - Second author paper, under review.
- **Technical Skills:** Python, ROS.

Localiza Rent a Car SA — *Belo Horizonte , Brazil*
Software Engineer Intern — *Aug 2021 - Fev 2022*
- Backend Software Developer.
- Responsible for developing the Human Resources software application.
- **Technical Skills:** C#, SQL.

Evolutionary Computation Laboratory, UFMG — *Belo Horizonte , Brazil*
Undergraduate Fellowship Researcher — *Dec 2020 - Jul 2021*
- Evolutionary methods for optimizing the design of power distribution lines based on environmental conditions.
- Software development, designing graphical interfaces and generating reports.
- **Technical Skills:** Evolutionary Algorithms, Java.

AVANT, UFMG — *Belo Horizonte , Brazil*
Electronic & Software Division Member / Manager — *Nov 2017 - Nov 2020*
- AVANT UFMG is a student-composed team that works with drones automation.
- Electronic assembly, control, computer vision, navigation and path planning for aerial vehicles, drones.
- 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, Gazebo.

Scholarships and Awards

2023 **Academic Excellence Program (PROEX) Scholarship**
Four-year CAPES/PROEX Master's 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.

2017 **First place at Desafio do Engenharia Recebe**
Best proposal for urban mobility inside UFMG.

Skills

Programming: C, C++, Python, MATLAB
Tecnologies: ROS, Git, LaTeX.
Languages: Portuguese (Native), English.

Publications

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

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

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, and Douglas G. Macharet

To be submited (2025). (paper link)