

# LUCAS COELHO FIGUEIREDO

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## EDUCATION

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<b>University of São Paulo</b> MBA in Project Management	05/2022 - 04/2024 Online
<b>Federal University of Minas Gerais</b> MSc in Electrical Engineering, emphasis in Control and Robotics Thesis: Human-robot swarm interaction on multi-robot coverage control with Virtual Reality	08/2015 - 06/2018 Belo Horizonte, Brazil
<b>Udacity</b> Self-driving car Engineer Nanodegree	01/2019 - 06/2019 Online
<b>Rockstart Accelerator</b> Startup Acceleration Program, intensive course on entrepreneurship	08/2016 - 08/2016 Amsterdam, The Netherlands
<b>Federal University of Minas Gerais</b> Bachelor in Control and Automation Engineering	03/2010 - 07/2015 Belo Horizonte, Brazil
<b>The University of Texas at Austin</b> Exchange Program in Electrical Engineering and Computer Science	08/2013 - 05/2014 Austin, USA
<b>Federal Center of Technological Education</b> High School and Technical Program in Electronics	05/2007 - 12/2009 Belo Horizonte, Brazil

## EXPERIENCE

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<b>Realtime Robotics Inc.</b> Senior Software Engineer	12/2022 - Today Boston, USA (Remote)
<ul style="list-style-type: none"><li>· C++ engineer on the RapidPlan Create products</li><li>· Implemented novel motion planning algorithms for robotic arm obstacle avoidance that converge 60% faster and with 20% shorter paths than previous implementations</li><li>· Scrum Master of the team, responsible for the team's ceremonies and processes</li></ul>	
<b>Hexagon Mining</b> Specialist Software Engineer III - Autonomous Vehicles	11/2017 - 11/2022 Belo Horizonte, Brazil
<ul style="list-style-type: none"><li>· Technical lead on the fleet management system for autonomous vehicles, helping the team designing highly reliable machine-to-machine communication protocols for distributed systems in mining environment using DDS in C++</li><li>· Responsible for the robotics framework in C++ for Hexagon Mining autonomous solution</li><li>· Great experience integrating complex products into Hexagon's autonomous solutions, including a high precision GPS-based parking assist, a fleet management system for mining, and a collision-avoidance system</li><li>· Implemented highly reliable machine-to-machine communication protocols using DDS in C++ (RTI and OpenSplice) and integrated with three different OEMs</li><li>· Technical mentorship of other seven engineers in the team</li></ul>	
<b>Freelance Android Developer</b> Belo Horizonte, Brazil	10/2016- 05/2019
<ul style="list-style-type: none"><li>· Designed portable energy meter circuit boards, choosing microcontrollers, sensors and communication protocols, while also developing the Android app to control it</li><li>· Developed Android apps for CEMIG and Minipa, raising requirements with clients, and developed the backend in Java</li></ul>	
<b>Newatt Energy Systems</b> Co-Founder and CTO	09/2015 - 08/2017 Belo Horizonte, Brazil, and Amsterdam, The Netherlands
<ul style="list-style-type: none"><li>· Designed embedded hardware and firmware for STM32 microcontrollers in a wireless energy sensor, using C++ and Python</li><li>· Responsible for the technical decisions and relationship with partners and investors</li><li>· Managed the team for the implementation of the cloud architecture for energy data processing in Node.js and Python on AWS. Implemented data collection using MQTT</li></ul>	
<b>DTI Sistemas</b> Software Development Intern	08/2014 - 08/2015 Belo Horizonte, Brazil
<ul style="list-style-type: none"><li>· Maintenance and development for applications in Java and C# in various industries such as car rental, dam management and healthcare</li></ul>	

## Multi-robot Systems Laboratory - Boston University

Summer Research Intern: 400 hours

05/2014 - 08/2014

Boston, USA

- Created algorithms for multi-robot systems applied in area coverage and autonomous exploration
- Developed embedded software for *m3pi* robots in C++
- Published academic results at ICRA 2015 and IJRR 2017

## Computation and Robotics Lab - UFMG

Undergraduate Research Assistant: 2880 hours

10/2010 - 08/2013

Belo Horizonte, Brazil

- Developed algorithms for multi-robot coverage and UAV trajectory tracking using C++, ROS, and MATLAB in a Linux environment
- Large experience in ROS, working on it since Diamondback version (2011) and becoming a reference on ROS for labmates and professors

## AWARDS

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### Hexagon Mining Hackathon

2022

*Winner*

Belo Horizonte, Brazil

- Integrated 3 different Hexagon Mining products into a simulator with virtual reality. Got a Xbox Series X as a prize.

### Sabiá Laranjeira Award

2017

*Winner*

São Paulo, Brazil

- Awarded by "Plataforma Liderança com Valores" institute for the work on Newatt Energy Systems.

### Rockstart Smart Energy Program

2016

*Finalist*

Amsterdam, The Netherlands

- Awarded with a 6-month acceleration program in Amsterdam and EUR 75k in investment.

### Brazil Scientific Mobility Program

08/2013 - 08/2014

*Awardee*

Austin, USA

- Selected for a grant that covered a year of studies at The University of Texas at Austin, including tuitions, housing, meals and travel expenses.

## PUBLICATIONS

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### Brazilian Automatics Congress

08/2018

- L. C. Figueiredo, I. L. Carvalho, L. C. A. Pimenta. "Voronoi Multi-Robot Coverage Control in Non-Convex Environments with Human Interaction in Virtual Reality"
- Experimental results at <https://www.youtube.com/watch?v=cpniwb6UrF8>

### International Journal of Robotics Research (IJRR)

02/2017

- A. Pierson, L. C. Figueiredo, L. C. A. Pimenta, and M. Schwager. "Adapting to Sensing and Actuation Variations in Multi-Robot Coverage"

### IEEE International Conference on Robotics and Automation (ICRA)

05/2015

- A. Pierson, L. C. Figueiredo, L. C. A. Pimenta, and M. Schwager. "Adapting to Performance Variations in Multi-Robot Coverage"
- Experimental results at <https://www.youtube.com/watch?v=qyYt3frZ7aw>

## SKILLS

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### Programming

Proficient: C++, GTest, Python, ROS, RTI DDS, Git, Ubuntu  
Average: Android, Java, OpenSplice DDS, C#, CMake, Docker, OpenCV  
Beginner: Node.js, MATLAB, SQL, PCL, Keras

### Office

Word, PowerPoint, Excel

### Managerial

Scrum, Agile, Lean Startup

### Other

LaTeX, UML

### English

Fluent

### Portuguese

Native

### Hobbies

Photography, scuba diving, cooking, mountain biking, electronics projects