



## Arthur Fender Coelho Bucker

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### ABOUT ME

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Interest in the areas of Mechatronics Engineering, Robotics, AI, and Computer Vision

### WORK AND RESEARCH EXPERIENCE

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#### Munich Institute of Robotics and Machine Intelligence — Research intern

[ 10/2021 – Current ]

Conducting Research in collaboration with "Microsoft Business AI - Science & Research (US)" in the field of Human-Robot Interaction. The goal is to develop a system able to map natural language interactions and Trajectory changes. The approach aims to be agnostic of the robotic platform and to work on top of arbitrary motion planners. Our results are being submitted to the IROS2022 conference.

#### Carnegie Mellon University - Researcher Intern

[ 05/2020 – 10/2020 ]

Conducted 2 researches at AirLab CMU on the field of AI and Robotics. Achieving 2 publications at IEEE -ICRA 2021: "Coordinating Multiple Aerial Cameras for Robot Cinematography" ( 1st author ) and "Learning semantic control space for expressive robot cinematography" ( 2nd author ).

<https://arthurfenderbucker.github.io/publications/>

#### International Product Development

[ 08/2018 – 05/2019 ]

Technical leadership on an interdisciplinary group of 8 master students from USP and Aalto University (Finland) for the development of a Hydro Acoustics Localization and Communication System for Divers. The project, sponsored by SAAB, was developed with a budget of €10.000.

[https://arthurfenderbucker.github.io/porfolio/Hydro-acoustic\\_localizer](https://arthurfenderbucker.github.io/porfolio/Hydro-acoustic_localizer)

#### CITI USP, Brazil — Research intern

[ 08/2018 – 05/2020 ]

Applying concepts of distributed networks and swarm intelligence in embedded systems for sea turtle life monitoring and organic sensing. The project is being developed in a partnership with project Tamar

[https://arthurfenderbucker.github.io/porfolio/Internet\\_of\\_Turtles\\_-\\_Distributed\\_tracking\\_System](https://arthurfenderbucker.github.io/porfolio/Internet_of_Turtles_-_Distributed_tracking_System)

## **Grupo Turing AI — Head of project management**

[ 02/2018 – 08/2018 ]

A group with the goal of studying, applying, and disseminating Artificial Intelligence Knowledge.

Managed the group members on the development of several AI projects. As a group member, I led or participated in projects on fields of computer vision (Hepatic carcinoma outcome prediction, Brazilian sign language simultaneous translation), Natural Language Processing (political thermometer of Brazilian Politicians on social media), and Evolutionary Algorithms (autonomous players of Pong and Tetris).

Group member ( Jan, 2017 - dec, 2020)

[https://arthurfenderbucker.github.io/porfolio/robotic\\_hand](https://arthurfenderbucker.github.io/porfolio/robotic_hand)

## **Skyrats, Autonomous Drones — Member**

[ 10/2018 – 09/2020 ]

Group of Autonomous drones design of the University of São Paulo

Responsible for developing computer vision and AI solutions for embedded systems and autonomous Drones. In addition to working on the hardware and electronics design.

Captain of the indoor team at IMAV 2019 Madrid - International Micro Air Vehicle Competition.

<https://arthurfenderbucker.github.io/porfolio/IMAV>

## **AB InBev, Brazil — Summer intern**

[ 01/2018 – 03/2018 ]

Worked for 2 months with computer vision solutions for product identification, Business Intelligence and predictive analytics at the Logistics and Distribution Center of AB InBev.

## **EDUCATION**

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### **Technische Universität München**

[ 10/2020 – Current ]

M. Mechatronics and Robotics

### **Escola Politécnica da Universidade de São Paulo**

[ 01/2017 – Current ]

B. Mechatronics Engineering

## **PUBLICATIONS**

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### **Do You See What I See? Coordinating Multiple Aerial Cameras for Robot Cinematography**

[ 2021 – 2021 ]

Published in *IEEE International Conference on Robotics and Automation (ICRA 2021)*

[https://arthurfenderbucker.github.io/publication/Coordinating\\_Multiple\\_Aerial\\_Cameras\\_for\\_Robot\\_Cinematography](https://arthurfenderbucker.github.io/publication/Coordinating_Multiple_Aerial_Cameras_for_Robot_Cinematography)

<https://arxiv.org/abs/2011.05437>

[https://youtu.be/Qq\\_dRGNAUMs](https://youtu.be/Qq_dRGNAUMs)

### **Batteries, camera, action! Learning a semantic control space for expressive robot cinematography**

[ 2021 – 2021 ]

Published in *IEEE International Conference on Robotics and Automation (ICRA 2021)*

[https://arthurfenderbucker.github.io/publication/Learning\\_a\\_semantic\\_control\\_space\\_for\\_expressive\\_robot\\_cinematography](https://arthurfenderbucker.github.io/publication/Learning_a_semantic_control_space_for_expressive_robot_cinematography)

<https://arxiv.org/abs/2011.10118>

<https://www.youtube.com/watch?v=aN3kGDRo0XE>

## **Graph Neural Networks for Improved El Nino Forecasting**

[ 2020 – 2020 ]

Published in NeurIPS 2020 workshop on Tackling Climate Change with Machine Learning & EGU2021 (Proposal paper)

[https://arthurfenderbucker.github.io/publication/Graph\\_Neural\\_Networks\\_for\\_Improved\\_El\\_Nino\\_Forecasting](https://arthurfenderbucker.github.io/publication/Graph_Neural_Networks_for_Improved_El_Nino_Forecasting)

<https://arxiv.org/abs/2012.01598>

## **AWARDS**

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### **Fellow at Fundação Estudar**

[ 07/2020 – Current ]

Leaders program (approval rate = 0.05%)

### **Summer Exchange in China (Huawei)**

[ 15/10/2019 – 03/11/2019 ]

Seeds for the Future program

### **Winning Team at Hackathon Ambev**

(Hack the World 2017 SP)

### **Best project award and Team leader**

at PACE POLI USP 2017 Competition (1st out of 200 teams)

### **Brazilian Robotics Olympics Finalist**

A representative of the State of São Paulo at the national stages of the Brazilian Robotics Olympics

(team leader 2015 & 2016)

### **Silver medal in the national Theoretical Robotics Olympics (2016)**

### **Team gold medal at the “International Olympiad Mathématiques sans frontières” (2016)**

## **LANGUAGES**

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**Portuguese - Native**

**English - Fluent**

**German - Intermediate**

**French - Basic**

**Chinese - Basic**