ROGERIO BONATTI

Member of Technical Staff, Microsoft AI
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https://rogeriobonatti.github.io/ · LinkedIn · Twitter · Publications

EDUCATION

Carnegie Mellon University, Robotics Institute, Pittsburgh, PA — *Aug 2016 - May 2021*
Ph.D. in Robotics, School of Computer Science

University of São Paulo, Polytechnic School, São Paulo, Brazil — *Jan 2011 - Jul 2016*
B.S., Mechatronics Engineering - Robotics — GPA: 8.6/10, non-curved, top 3/800

Cornell University, College of Engineering, Ithaca, NY — *Jan 2013 – Dec 2013*
Study abroad, Mechanical Engineering. — GPA: 4.08/4.30
One-year study program. Full scholarship by Brazil's Ministry of Education

RESEARCH EXPERIENCE

Microsoft AI — Feb 2025 - Present
Member of Technical Staff — *Pittsburgh, PA*

· Post training of LLMs

Microsoft Applied Sciences Group — May 2023 – Feb 2025
Senior Researcher — *Redmond, WA*

· Developing AI-based experiences for the new Windows Copilot (agents, proactive recommendations)
· Training large language models (LLMs), computer vision models, and generative AI tools
· 3 patent submissions in AI for computer assistants

Microsoft Research — July 2021 – May 2023
Senior Researcher, Autonomous Systems and Robotics Group — *Redmond, WA*

· Developed multi-modal foundational models for robotics and decision-making. My research focus was to create generative machine learning models that fuse language, vision, and geometrical features to allow autonomous agents to take actions in the real world.
· Conference publications at ICCV, ICLR, ICRA, IROS, and workshop organizer at ICRA 23

Facebook AI Research (FAIR) — May 2020 – Aug 2020
Research Intern with Dr. Jessica Hodgins and Dr. Mustafa Mukadam — *Pittsburgh, PA*

· Worked with Jessica Hodgins and Mustafa Mukadam on learning a manifold of movie emotion descriptors, and a generative model to automatically execute distinct styles for autonomous drone cameras.

Microsoft Research — May 2019 – Aug 2019
Research Intern with Dr. Ashish Kapoor — *Redmond, WA*

· Worked with Ashish Kapoor and Vibhav Vineet on learning efficient state representations for imitation learning that can generalize across simulation and real-life data.

AirLab, *Carnegie Mellon University* — Aug 2016 – May 2021
Ph.D. Student with Prof. Sebastian Scherer — *Pittsburgh, PA*

· Worked at the AirLab developing motion planning and perception algorithms for aerial vehicles.

Decision Making Lab, *University of São Paulo* Jan 2015 – Feb 2016
Research Intern with Prof. Fabio Cozman *São Paulo, Brazil*

· Developed an automated email answering algorithm for call centers, using artificial intelligence, machine learning and natural language processing, achieving 87% precision in business email classification in 8 categories.

Laboratory for Intelligent Machine Systems, *Cornell University* Feb 2013 – Dec 2013
Research Intern with Prof. Ephrahim Garcia *Ithaca, NY*

· Worked on energy harvesting from wind turbines in urban environments, analyzing wind speed around bluff bodies in wind tunnels in order to identify turbulences. Identified a 240% increase in wind power density combined with a relatively small increase of 10% in turbulence.

Biomedical Engineering Laboratory, *University of São Paulo* Jul 2011 – Dec 2012
Research Intern with Prof. Henrique Takachi Moriya *São Paulo, Brazil*

· Work on the design and development of a small animal mechanical ventilator for studying the respiratory system of small mammals (20-300 g).

AWARDS, HONORS AND SCHOLARSHIPS

· 2020: Best Student Paper Award finalist, IROS 2020

· 2020: Siebel Scholarship, class of 2021 ($35,000)

· 2020: Microsoft Research Dissertation Grant ($25,000)

· 2019: Best paper finalist, IROS 2019 Vision-Based Drones Workshop

· 2019: James R. Swartz Entrepreneurial Fellowship, CMU

· 2019: Selected for the CMU NSF I-Corps entrepreurship program ($2,500)

· 2017-2019: Travel awards: RSS'17, ISER'18, IROS'19, CMU Provost

· 2017: CMU Technology and Entertainment Proposal for Autonomous Cinematography ($60,000)

· 2014: Fundação Estudar fellowship for outstanding academic trajectory (28/31,000) (∼$10,000)

· 2012-2014: Research scholarship, State of São Paulo Research Foundation (FAPESP) (∼$3,000)

· 2013: Dean's List, Cornell University

· 2013: Full one-year scholarship from Brazil's Ministry of Education for Cornell University (∼$65,000)

· 2011: Entered the Polytechnic School of the University of São Paulo in 3rd/10,600 applicants

· 2010: High school valedictorian – Colégio Visconde de Porto Seguro, São Paulo, Brazil

· 2010: Gold Medal, Brazilian Physics Olympics (top 20 from over 50,000 competitors)

PUBLICATIONS

Peer-reviewed conferences and journals:

[P1] Rogerio Bonatti, Dan Zhao, Francesco Bonacci, Dillon Dupont, Sara Abdali, Yinheng Li, Justin Wagle, Kazuhito Koishida, Arthur Bucker, Lawrence Jang, Zack Hui. **Windows Agent Arena: Evaluating Multi-Modal OS Agents at Scale**. *ICML*. 2025. [Webpage] [PDF] [Video] [Code] [Blog post]

[P2] Lawrence Jang, Yinheng Li, Dan Zhao, Charles Ding, Justin Lin, Paul Pu Liang, Rogerio Bonatti, Kazuhito Koishida **Videowebarena: Evaluating long context multimodal agents with video understanding web tasks**. *ICLR*. 2025. [Webpage] [PDF] [Code]

[C3] Sai Vemprala*, Rogerio Bonatti*, Arthur Bucker, Ashish Kapoor. *Equal contribution **ChatGPT for Robotics: Design Principles and Model Abilities**. *IEEE Access*. 2024. [Webpage] [PDF] [Video] [Code]

[C4] Anish Bhattacharya, Ratnesh Madaan, Fernando Cladera, Sai Vemprala, Rogerio Bonatti, Kostas Daniilidis, Ashish Kapoor, Vijay Kumar, Nikolai Matni, Jayesh K Gupta **Evdnerf: Reconstructing event data with dynamic neural radiance fields**. *IEEE WACV*. 2023. [PDF]

[C5] Yue Meng, Sai Vemprala, Rogerio Bonatti, Chuchu Fan, Ashish Kapoor **ConBaT: Control Barrier Transformer for Safety-Critical Policy Learning**. *International Conference on Robotics and Automation (ICRA)*. 2024. [PDF]

[C6] Yao Wei, Yanchao Sun, Ruijie Zheng, Sai Vemprala, Rogerio Bonatti, Shuhang Chen, Ratnesh Madaan, Zhongjie Ba, Ashish Kapoor, Shuang Ma. **Is Imitation All You Need? Generalized Decision-Making with Dual-Phase Training**. *International Conference on Computer Vision (ICCV)*. 2023. [Webpage/Code] [PDF]

[C7] **[Notable paper (top 25%)]**
Yanchao Sun, Shuang Ma, Ratnesh Madaan, Rogerio Bonatti, Furong Huang, Ashish Kapoor. **SMART: Self-supervised Multi-task pretrAining with contRol Transformers**. *International Conference on Learning Representations (ICLR)*. 2023. [Webpage] [PDF] [Video]

[C8] Rogerio Bonatti, Sai Vemprala, Shuang Ma, Felipe Vieira Frujeri, Ashish Kapoor. **PACT: Perception-Action Causal Transformer for Autoregressive Robotics Pre-Training**. *International Conference on Intelligent Robots and Systems (IROS)*. 2023. [Webpage] [PDF] [Video] [Code]

[C9] Arthur Bucker, Luis Figueredo, Sami Haddadin, Ashish Kapoor, Shuang Ma, Sai Vemprala, Rogerio Bonatti. **LaTTe: Language Trajectory TransformEr**. *International Conference on Robotics and Automation (ICRA)*. 2023. [Webpage] [PDF] [Video]

[C10] Arthur Bucker, Luis Figueredo, Sami Haddadin, Ashish Kapoor, Shuang Ma, Rogerio Bonatti. **Reshaping Robot Trajectories Using Natural Language Commands: A Study of Multi-Modal Data Alignment Using Transformers**. *International Conference on Intelligent Robots and Systems (IROS)*. 2022. [Webpage] [PDF] [Video]

[C11] Azarakhsh Keipour, Guilherme AS Pereira, Rogerio Bonatti, Rohit Garg, Puru Rastogi, Geetesh Dubey, Sebastian Scherer. **Visual Servoing Approach to Autonomous UAV Landing on a Moving Vehicle**. *Sensors*. 2022. [PDF]

[C12] Cherie Ho, Andrew Yong, Harry Freeman, Rohan Rao, Rogerio Bonatti, Sebastian Scherer. **3D Human Reconstruction in the Wild with Collaborative Aerial Cameras**. *International Conference on Intelligent Robots and Systems (IROS)*. 2021.

[C13] Rogerio Bonatti, Arthur Bucker, Sebastian Scherer, Mustafa Mukadam, Jessica Hodgins. **Batteries, camera, action! Learning a semantic control space for expressive robot cinematography**. *International Conference on Robotics and Automation (ICRA)*. 2021. [PDF] [Video]

[C14] Arthur Bucker, Rogerio Bonatti, Sebastian Scherer. **Do you See What I See? Coordinating Multiple Aerial Cameras for Robot Cinematography**. *International Conference on Robotics and Automation (ICRA)*. 2021. [PDF] [Video]

[C15] **[Best Student Paper Award Finalist – 3 out of 2996 submissions]**
Rogerio Bonatti, R. Madaan, V. Vineet, S. Scherer, A. Kapoor. **Learning Visuomotor Policies for Aerial Navigation Using Cross-Modal Representations**. *International Conference on Intelligent Robots and Systems (IROS)*. 2020. [PDF] [Video] [Code] [Media]

[C16] Rogerio Bonatti, Wenshan Wang, Cherie Ho, Aayush Ahuja, Mirko Gschwindt, Efe Camci, Erdal Kayacan, Sanjiban Choudhury, Sebastian Scherer. **Autonomous Aerial Cinematography Among Unstructured Environments With Learned Artistic Decision-Making**. *Journal of Field Robotics (JFR)*. 2020. [PDF] [Video] [Media]

[C17] Rogerio Bonatti, Cherie Ho, Wenshan Wang, Sanjiban Choudhury, Sebastian Scherer. **Towards a Robust Aerial Cinematography Platform: Localizing and Tracking Moving Targets in Unstructured Environments**. *International Conference on Intelligent Robots and Systems (IROS)*. 2019. [PDF] [Video]

[C18] Mirko Gschwindt, Efe Camci, Rogerio Bonatti, Wenshan Wang, Sebastian Scherer. **Can a Robot Become a Movie Director? Learning Artistic Principles for Aerial Cinematography**. *International Conference on Intelligent Robots and Systems (IROS)*. 2019. [PDF] [Video]

[C19] Wenshan Wang, Aayush Ahuja, Yanfu Zhang, Rogerio Bonatti, Sebastian Scherer. **Improved Generalization of Heading Direction Estimation for Aerial Filming Using Semi-supervised Regression**. *International Conference on Robotics and Automation (ICRA)*. 2019. [PDF] [Video]

[C20] Rogerio Bonatti, Yanfu Zhang, Sanjiban Choudhury, Wenshan Wang, Sebastian Scherer. **Autonomous drone cinematographer: Using artistic principles to create smooth, safe, occlusion-free trajectories for aerial filming**. *International Symposium on Experimental Robotics (ISER)*. 2018. [PDF] [Video 1] [Video 2] [Video 3]

[C21] Yanfu Zhang, Wenshan Wang, Rogerio Bonatti, Daniel Maturana, Sebastian Scherer. **Integrating kinematics and environment context into deep inverse reinforcement learning for predicting off-road vehicle trajectories**. *Conference on Robot Learning (CoRL)*. 2018. [PDF] [Video]

[C22] Mikhail Yakhnis, Rogerio Bonatti, Ryan Gryszko, and Chinaso Obiejesi. **Influence of Building Geometry on Wind Power Potential**. *American Institute of Aeronautics and Astronautics Student Conference (AIAA)*. 2014. [PDF]

[C23] Rogerio Bonatti, Andrea F. Cruz, and Henrique Takashi Moriya. **Design and Characterization of a Volume-Cycled Small Animal Mechanical Ventilator Coupled with a Respiratory System Model**. *VI Latin American Congress on Biomedical Engineering (CLAIB)*. 2014. [PDF]

[C24] Rogerio Bonatti and Henrique Takashi Moriya. **Small animal mechanical ventilator with control software**. *International Symposium of the University of São Paulo (SIICUSP)*. 2012. [PDF]

Workshops and others:

[W1] Rogerio Bonatti, Sai Vemprala, Shuang Ma, Felipe Vieira Frujeri, Ashish Kapoor. **PACT: Perception-Action Causal Transformer for Autoregressive Robotics Pre-Training**. *NeurIPS workshop on Foundation Models for Decision Making*. 2022. [Webpage] [PDF] [Video] [Code]

[W2] Arthur Bucker, Luis Figueredo, Sami Haddadin, Ashish Kapoor, Shuang Ma, Rogerio Bonatti. **Reshaping Robot Trajectories Using Natural Language Commands: A Study of Multi-Modal Data Alignment Using Transformers**. *ICRA Shared Autonomy in Physical Human-Robot Interaction: Adaptability and Trust workshop*. 2022. [PDF]

[W3] Arthur Bucker, Luis Figueredo, Sami Haddadin, Ashish Kapoor, Shuang Ma, Rogerio Bonatti. **Reshaping Robot Trajectories Using Natural Language Commands: A Study of Multi-Modal Data Alignment Using Transformers**. *ICRA Shared Autonomy in Physical Human-Robot Interaction: Adaptability and Trust workshop*. 2022. [PDF]

[W4] Arthur Bucker, Luis Figueredo, Sami Haddadin, Ashish Kapoor, Shuang Ma, Rogerio Bonatti. **Reshaping Robot Trajectories Using Natural Language Commands: A Study of Multi-Modal Data Alignment Using Transformers**. *ICRA Shared Autonomy in Physical Human-Robot Interaction: Adaptability and Trust workshop*. 2022. [PDF]

[W5] [**Spotlight Talk**] Arthur Bucker, Luis Figueredo, Sami Haddadin, Ashish Kapoor, Shuang Ma, Rogerio Bonatti. **Reshaping Robot Trajectories Using Natural Language Commands: A Study of Multi-Modal Data Alignment Using Transformers**. *ICRA Collaborative Robots and the Work of the Future workshop*. 2022. [PDF]

[W6] [**Best workshop paper finalist**] Rogerio Bonatti, Wenshan Wang, Cherie Ho, Aayush Ahuja, Mirko Gschwindt, Efe Camci, Erdal Kayacan, Sanjiban Choudhury, Sebastian Scherer. **Autonomous Aerial Cinematography Among Unstructured Environments With Learned Artistic Decision-Making**. *IROS Vision-based Drones Workshop*. 2019. [PDF]

[W7] Yanfu Zhang*****, Wenshan Wang*****, Rogerio Bonatti*, Daniel Maturana, Sebastian Scherer, *Equal contribution. **Autonomous Cinematography using Unmanned Aerial Vehicles**. *IROS Vision-based Drones Workshop*. 2018. [PDF]

[W8] R. Madaan, D.M Saxena, Rogerio Bonatti and S. Scherer. **Deep Flight: Autonomous Quadrotor Navigation with Deep Reinforcement Learning**. *Workshop on Learning perception and control for autonomous flight: safety, memory, and efficiency, RSS*. 2017. [PDF] [Longer PDF] [Video]

[W9] Rogerio Bonatti, Arthur G. de Paula, Vitor S. Lamarca and Fabio G. Cozman. **Effect of Part-of-Speech and Lemmatization Filtering in Email Classification for Automatic Reply**. *Workshop on Knowledge Extraction from Text, Association for the Advancement of Artificial Intelligence AAAI*. 2016. [PDF]

[Undergraduate Thesis] Rogerio Bonatti, Arthur G. de Paula. **Development of Email Classifier in Brazilian Portuguese Using Feature Selection for Automatic Response**. *Undergraduate Thesis at University of São Paulo, Dept. of Mechatronics Engineering*. 2015. [PDF]

OTHER PROFESSIONAL EXPERIENCE

McKinsey & Co. Aug 2015 - May 2016
Business Analyst Intern *São Paulo, Brazil*

· Worked as a generatist consultant on Supply Chain, Logistics, Purchasing, and Commercial Policy Transformation across multiple industries

Itaú BBA Jul 2014 – Aug 2014
Winter Intern, Cost Optimization and Estimation Team *São Paulo, Brazil*

· Itaú BBA is Latin America's largest corporate investment bank, in a holding with $85B market cap
· Studied different cost analysis techniques and their application to the bank's products in a $2 B segment
· Developed 2 new reports used in the comparison between Corporate Inv. Banking and Middle clients

Amgen Inc May 2013 – Aug 2013
Summer Intern, Global Strategic Sourcing, Finance and Strategy Team *Thousand Oaks, CA*

· Amgen is the largest biotech company in the world with $18.7B in sales in 2013
· Optimized marketing contracts with traditional advertising agencies
· Developed and applied statistical analysis to a marketing benchmarking database leading to an estimated 4x increase in savings ($8M) and 60% decrease (4 months) in the time required to perform data analysis

ACADEMIC AND PROFESSIONAL TALKS

Institutional talks:

Johns Hopkins University Invited talk, Virtual May 2023
UT Austin Invited talk, Virtual April 2023
Carnegie Mellon Invited talk, Virtual Feb 2023

Air Force Research Laboratory Invited talk, Virtual May 2022
Automate Show Invited talk, Detroit, MI May 2022
Northwest Robotics Symposium Invited talk, Seattle, WA May 2022
Carnegie Mellon University PhD Thesis Defense, Pittsburgh, PA May 2021
Tesla Research talk, virtual Feb 2021
Microsoft Research Research talk, virtual Feb 2021
Skydio Research talk, virtual Feb 2021
DJI Invited talk, Shenzhen, China Nov 2019
Apple Invited talk, Seattle, WA Aug 2019
Microsoft Research Research talk, Redmond, WA Aug 2019
University of Washington Invited talk, Seattle, WA Aug 2019
Carnegie Mellon University PhD Qualifier, Pittsburgh, PA Nov 2018
University of São Paulo Invited talk, São Paulo, Brazil Jul 2017
Federal University of Espirito Santo Invited talk, Vitoria, Brazil Jul 2016
University of São Paulo Invited talk, São Paulo, Brazil Jun 2016
Colegio Visconde de Porto Seguro Invited talk, São Paulo, Brazil [Video] May 2016

Conference orals:

ICRA 2021 Main conference presentation (online) May 2021
IROS 2020 Main conference presentation (online) Nov 2020
RSS 2020 Robust Autonomy Workshop (online) June 2020
ICRA 2020 Machine Learning in Planning and Control Workshop (online) June 2020
IROS 2019 Main conference presentation, Macau, China Nov 2019
IROS 2019 Workshop on Vision-Based drones, Macau, China Nov 2019
ISER 2018 Single-track oral presentation, Buenos Aires, Argentina Nov 2018
IROS 2018 Workshop on Vision-Based drones, Madrid, Spain Oct 2018
RSS 2017 Workshop on Learning Perception and Control for Flight, Boston, MA Jul 2017
AAAI 2016 Workshop on Knowledge Extraction from Text, Phoenix, AZ Feb 2016

SELECTED MEDIA COVERAGE

ChatGPT for Robotics [IEEE] [Business Insider] [New Scientist] [Gizmodo] [ABC News] June 2021
Futurity Name the emotion you want the drone video to capture [Link] June 2021
Venture Beat AI that directs drones to film 'exciting' shots lowers production costs [Link] Nov 2020
CMU Computer Science Five SCS Students Named Siebel Scholars [Link] Oct 2020
Microsoft Research Dissertation Grant supports students' cutting-edge work [Link] June 2020
Microsoft Research Blog Training deep control policies for the real world [Link] March 2020
Venture Beat Researchers train AI in simulation to control a real-world drone [Link] March 2020
Gizmodo Autonomous Camera Drones Film Like a Hollywood Director [Link] Nov 2019
CMU Computer Scicence Putting the Power of a Film Director in a Drone [Link] Nov 2019
Inverse Stunning A.I. results show how drones could become the next auteurs [Link] Nov 2019
ZD Net Action! Autonomous drone doubles as a film director [Link] Nov 2019
Microsoft Research Blog Rapidly enabling autonomy at scale with simulation [Link] April 2019
Nvidia Developer Autonomous Drone Cinematographer [Link] Sep 2018
CMU Robotics Institute Autonomous Drone Cinematographer [Link] Aug 2019
Estudar Fora: Undergraduate students represent Brazil at AAAI 2016 [Link] Mar 2016
Fundacao Estudar Profile page for fellowship given to outstanding students [Link] Jul 2014

ACADEMIC ACTIVITY AND SERVICE

Workshop organization:

ICRA 2023: Pretraining for Robotics (PT4R) [Website]

Teaching assistant:

CMU 16-782 Planning and Decision-Making. Instructor: Maxim Likhachev [Website] Fall 2019

CMU 16-811 Math Fundamentals for Robotics. Instructor: Michel Erdmann [Website] Fall 2018

Conference and Journal Reviewing:

RA-L 22, T-RO 22, ICRA 22, IROS 22	2022
RA-L 21, ICRA 21, CHI 21	2021
JFR 20, IROS 20, CHI 20, TCSVT 20	2020
JFR 19, ICRA 19, IROS 19, SSRR 19	2019
JFR 18, ICRA 18, IROS 18	2018

University Activity:

Chair, Activities Committee Field Robotics Center, CMU 2017 - 2021
Volunteer, RoboOrg Robotics Institute, CMU 2016 - 2021

Masters / PhD Thesis Committees at CMU Robotics:

Xuning Yang, Toward intuitive human controlled MAVs: motion primitives based teleoperation 2019
Matthew Collins, Efficient Planning for High-Speed MAV Flight Using Topological Graphs 2019
Samuel Clarke, Robot Learning for Manipulation of Granular Materials 2019
Vasu Agrawal, Ground Up Design of a Multi-modal Object Localization System 2019

SKILLS

Natural Languages	Native Portuguese, English, German, Spanish, French (and at some point tried learning Mandarin Chinese)
Computer Languages	C, C++, Python, Tensorflow, Pytorch, MATLAB, Java, LabVIEW, HTML, CSS, PHP, G, LaTeX
Software	ROS, SolidWorks, NX7.5, Autodesk Inventor, AutoCAD, Office Suite, DipTrace, Weka
Technical Skills	Basic machining ability, Basic manufacturing of Printed Circuit Boards (PCBs), 3D Printing, CNC Machining

REFERENCES

Available upon request

May 26, 2025