Raul Steinmetz

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About Me

Hello! I'm Raul, a brazilian Computer Science student passionate about the synergy between computing and intelligence. I focus mainly on researching **Deep Reinforcement Learning**.

General Information

- Nationality: Brazilian and Italian (dual citizenship)
- Date of Birth: August 08, 2003 (21 years old)
- Current Institution: Federal University of Santa Maria (Brazil)
- Current GPA: 3.66/4.00 (American), 2.94/3.00 (Japanese)

Work and Scholarships

09/2023 – current — **Reinforcement Learning for Robotics Research Grant,** CAPES (Brazil). Researching deep reinforcement learning for terrestrial robot navigation.

03/2023 – 08/2023 — **Deep Computer Vision for Precision Agriculture Research Grant,** Wageningen University and Research and Federal University of Santa Maria. Researched image instance segmentation methods for weed and soy detection in crops.

09/2022 – 03/2023 — **Human Robot Interaction Internship,** Qiron Robotics, Brazil. Enhanced humanoid robot AI for improved human-robot interaction, focused on facial recognition and conversational interfaces.

12/2021 – 08/2022 — **PET Research Grant,** Federal University of Santa Maria (Brazil). Supported peer learning, taught workshops and conducted research on invoice data analysis.

Education

2021 – current — **Bachelor of Science in Computer Science** – Federal University of Santa Maria, Brazil. Expected graduation in december 2024.

2014 – 2020 — **Advanced English Course** – Wizard Language School, Brazil. Graduated with the highest distinction.

2018 – 2020 — **High School Diploma** – Murialdo Ana Rech, Brazil. Arithmetic average of 9.22/10.0.

Research Publications

Papers Published in Journals

1. M. dos Santos Lima, V. A. Kich, R. Steinmetz, and D. F. Tello Gamarra, "Delta robot control by learning systems:: Harnessing the power of deep reinforcement learning algorithms," *Journal of Intelligent & Fuzzy Systems*, vol. 46, no. 2, pp. 4881–4894, 2024.
2. J. A. Bottega, V. A. Kich, J. C. d. Jesus, *et al.*, "Jubileo: An immersive simulation framework for social robot design," *Journal of Intelligent & Robotic Systems*, vol. 109, no. 4, p. 91, 2023.

Papers Presented in Conferences

1. J. A. Bottega, R. Steinmetz, A. H. Kolling, *et al.*, "Virtual reality platform to develop and test applications on human-robot social interaction," in *2022 Latin American Robotics Symposium (LARS), 2022 Brazilian Symposium on Robotics (SBR), and 2022 Workshop on Robotics in Education (WRE)*, IEEE, 2022, pp. 1–6.
2. J. D. Mazzarolo, R. Steinmetz, and S. L. Mergen, "Um estudo sobre a falta de padronizaçao na descriçao de produtos em notas fiscais eletrônicas," in *Anais do XVII Escola Regional de Banco de Dados*, SBC, 2022, pp. 31–40.
3. L. D. de Moraes, V. A. Kich, A. H. Kolling, *et al.*, "Double deep reinforcement learning techniques for low dimensional sensing mapless navigation of terrestrial mobile robots," in *International Conference on Intelligent Systems Design and Applications*, Springer, 2022, pp. 156–165.

Papers Accepted (to be presented and/or published)

1. R. Grando, R. Steinmetz, V. A. Kich, *et al.*, *Improving generalization in aerial and terrestrial mobile robots control through delayed policy learning*, 2024, Manuscript accepted for the 20th IEEE International Conference on Automation Science and Engineering (CASE).
2. V. Kich, J. Bottega, R. Steinmetz, R. Grando, A. Yorozu, and A. Ohya, *Curling the dream: Contrastive representations for world modeling in reinforcement learning*, 2024, Manuscript accepted for the 2024 International Conference on Control and Automation Systems.
3. V. Kich, J. Bottega, R. Steinmetz, R. Grando, A. Yorozu, and A. Ohya, *Kolmogorov-arnold networks for online reinforcement learning*, 2024, Manuscript accepted for the 2024 International Conference on Control and Automation Systems.
4. V. A. Kich, J. A. Bottega, R. Steinmetz, R. Grando, A. Yorozu, and A. Ohya, *Advancing behavior generation in mobile robotics through high-fidelity procedural simulations*, 2024, Manuscript accepted for the 33rd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN).
5. R. Steinmetz, V. A. Kich, H. Krever, *et al.*, *From seedling to harvest: The growingsoy dataset for weed detection in soy crops via instance segmentation*, 2024, Manuscript accepted for the 11th IEEE International Conference on Cybernetics and Intelligent Systems (CIS) and Robotics, Automation and Mechatronics (RAM).

Papers Under Review

1. R. Grando, R. Steinmetz, J. Jesus, *et al.*, "Parallel deep reinforcement learning for hybrid mobile robots," 2024, Manuscript under review for the Journal of Intelligent & Robotic Systems.
2. R. Steinmetz, F. Rosa, V. Kich, J. Bottega, R. Grando, and D. Gamarra, "Encoded representations and world modeling for autonomous terrestrial robot navigation," 2024, Manuscript under review for the Springer Autonomous Robots Journal.

Service

07/2022 **Machine Learning Workshop Presenter and Organizer**, Federal University of Santa Maria (Brazil).

06/2022 **Git and Github Workshop Presenter and Organizer**, Federal University of Santa Maria (Brazil).

05/2022 **Java Workshop Presenter and Organizer**, Federal University of Santa Maria (Brazil).

02/2022 **Latex Overleaf Workshop Presenter and Organizer**, Federal University of Santa Maria (Brazil).

2024 **Paper reviewer for conference**, 11th IEEE International Conference on Cybernetics and Intelligent Systems (CIS) and the 11th IEEE International Conference on Robotics, Automation and Mechatronics (RAM)

Idioms

English Fluent reading, writing and speaking.

Portuguese Native language.

Italian Basic reading, writing and speaking.

Academic References

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