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Juarez Monteiro

About Me

My career started in 2013 when I decided to study and understand computers and how we can program them. It all started when I was approved and allowed to study Systems Analysis (undergraduate) at the Federal Institute of Rio Grande do Sul (IFRS). During this period, I had the opportunity to expand my theory by working as an intern for several great companies, such as Stefanini, Dell, and CWI. Finally, I was exposed to artificial intelligence at the end of my undergraduate course. I did my final project on how games can be a great environment to create experiments with artificial intelligence algorithms.

In 2015, I started my Master's in Computer Science at the Pontifical Catholic University of Rio Grande do Sul (PUCRS). Influenced by artificial intelligence, I chose machine and deep learning. I became a full-grant student in partnership with Hewlett Packard (HP Brazil), and I joined their project to identify actions and goals in video sequences. In this project, I had the chance to develop my skills using the Python program language and several deep-learning models for classification and action recognition. During this period, I received the best student paper award at the IEEE Joint Conference on Neural Networks (IJCNN) for a work that uses action recognition to support visually impaired people. Two years later, In 2017, I received a Master's degree in Computer Science for a thesis involving the usage of small datasets with deep learning models. In addition, I was rewarded with the second-best Master's thesis in Artificial Intelligence by CTDIAC at the Brazilian Conference on Intelligent Systems.

In 2018 at PUCRS, I started my PhD, focusing on the research on self-supervised imitation learning using deep neural networks and agents theory in the second year of my PhD. I was approved to become an exchange student in the CAPES-PrInt program in partnership with the University of Aberdeen (UoA) in Aberdeen, Scotland. In addition, I joined the industry as a Machine Learning Engineer acting in the computer vision field and later as a Data Scientist for Sicredi Bank, where I work today, using Reinforcement and Machine Learning to create and maintain recommendation systems.

Education

2018–2023 **PhD in Computer Science**, *PUCRS*, Porto Alegre, Brazil
Advisor: Rodrigo C. Barros; Co-advisor: Felipe R. Meneguzzi.
Sandwich PhD at University of Aberdeen, Scotland. Co-advisor: Nir Oren.

2016–2018 **Master in Computer Science**, *PUCRS*, Porto Alegre, Brazil
Advisor: Rodrigo C. Barros.

2013–2015 **Graduation in System Analysis and Development**, *IFRS*, Canoas, Brazil
Advisor: Rafael C. Pinto.

Awards

2018 2nd. Best Master's Dissertation in Artificial Intelligence of Brazil, Best MSc Dissertation / PhD Thesis Contest in Artificial Intelligence (CTDIAC-BRACIS).

2017 Best Student Paper in IEEE Joint Conference on Neural Networks (IJCNN).

2015 Best Poster in Undergraduation Category on IFRS Scientific hall.

Languages

Portuguese - Native

English - Advanced

Skills

Programming Languages: Python, Java and Lua.

Machine and Deep Learning: Pytorch, Tensorflow, H2O, Scikit-learn and Caffe.

Research: Action/Activity Recognition, Imitation/Reinforcement Learning and Computer Vision.

Industry Collaborative Research

2018-2019 **Motorola/Lenovo**: This project developed several Deep Learning techniques aimed at handling data from and about mobile phones. Our contribution included algorithms for analyzing mobile phone reviews and identifying the sentiment about specific aspects of a mobile phone.

2016–2018 **Hewlett-Packard**: Learning and Inference for Ambient Intelligence was a project about the identification of action and goals in video sequences. I started working with deep learning algorithms and computer vision in that project.

Employment

09/2023 – Now **AI Researcher**, *Dell Technologies*, Porto Alegre, Brazil

As part of the OCTO Research Office at Dell Technologies, I lead and manage cutting-edge research projects focused on artificial intelligence, particularly language models. My role involves collaborating with international teams to develop innovative AI solutions and constantly updating my expertise with the latest advancements in AI and language processing. I am responsible for effectively communicating complex research findings to diverse stakeholders, actively participating in and contributing to Dell's data science community, and fostering a culture of knowledge sharing and professional growth. Additionally, I mentor new team members and contribute to strategic planning to align research projects with organizational goals.

05/2022 – 09/2023 **Data Scientist**, *Sicredi Bank*, Porto Alegre, Brazil

At Sicredi Bank, I spearheaded the development and implementation of machine learning models for robust and accurate recommender systems to enhance client product propositions. My role encompassed analyzing customer data to refine our B2C strategy, with a consistent focus on optimizing customer experience. I effectively communicated insights and strategies through storytelling to stakeholders. My daily responsibilities included programming in Python for model development and SQL for data exploration, utilizing tools like H2O, MLflow, Databricks, and Jupyter Notebooks. I also managed code versioning with Git and GitHub using VS Code, led A/B testing for system improvements, and conducted meetings in English with international partners to discuss enhancements and proofs of concept. Additionally, I was involved in strategic business planning to align model outcomes with organizational objectives, explored scientific literature to inform team strategies, and actively participated in and promoted our internal data scientist group.

11/2021 – 04/2022 **ML Engineer**, *Unico IdTech*, Porto Alegre, Brazil

At Unico IdTech, I created, tested, and maintained machine learning and computer vision models, mainly focusing on liveness detection systems. My work involved analyzing unstructured data to enhance our models and ensure they remain at the forefront of industry standards. Daily tasks included developing machine and deep learning models using advanced tools such as Python, TensorFlow, PyTorch, Hugging Face, Scikit-Learn, Pandas, WandB, and NumPy. I also created impactful visualizations with Matplotlib, Seaborn, and Bokeh to communicate findings effectively. Additionally, I managed code versioning using Git and GitHub in VS Code, led the ideation and execution of tests to refine the liveness detection systems, conducted thorough reviews of state-of-the-art (SOTA) literature to guide our studies, and explored scientific papers to identify and implement new strategies, reporting these insights back to my team.

05/2021 – 09/2021 **Professor (contract)**, *Feevale University*, Novo Hamburgo, Brazil, Machine Learning and Data Science courses

As a contract professor for the specialization postgraduate program, I taught Machine Learning and Data Science concepts, focusing on Python programming and the practical application of machine and deep learning concepts in publicly available datasets.

07/2018 – 03/2020 **Data Science Instructor**, *TargetTrust Courses*, Porto Alegre, Brazil

I led workshops and training sessions on data science techniques, tools, and best practices. This enabled professionals from various backgrounds to become proficient in data manipulation and analysis.

08/2019 – 02/2020 **Professor (contract)**, *Feevale University*, Novo Hamburgo, Brazil, Data Science courses

As a contract professor for the specialization postgraduate program, I taught advanced Python programming and Data Science courses. The curriculum was focused on practical applications of machine learning and deep learning concepts, tailored for professional development in these advanced technologies.

03/2018 – 08/2018 **Professor (internship)**, *PUCRS*, Porto Alegre, Brazil, Business Intelligence

Guided students through the complexities of business intelligence solutions. Focused on hands-on experiences with real-world data sets to solve business problems effectively using the Power BI tool.

03/2017 – 08/2017 **Professor (internship)**, *PUCRS*, Porto Alegre, Brazil, Database Laboratory

Conducted laboratory sessions that helped students grasp advanced database management concepts.

04/2015 – 09/2015 **Software Developer (Internship)**, *CWI Software*, Porto Alegre, Brazil

As a Software Developer Intern at CWI Software, I enhanced my programming skills across multiple languages and frameworks, including Java, Spring, C# and JavaScript, while also learning Agile methodologies and Scrum.

12/2013 – 02/2015 **Performance Tester (Internship)**, *Dell Technologies*, Porto Alegre, Brazil

At Dell, my role as a Performance Tester Intern involved executing detailed performance testing, optimizing software functionality, and working with diverse technologies to improve system reliability under various conditions.

04/2013 – 07/2013 **Service Reports (Internship)**, *Stefanini IT Solutions*, São Leopoldo, Brazil

During my internship at Stefanini, I managed service report data, contributing to streamlined operations and enhanced delivery metrics, utilizing my database management and data analysis skills.

Publications

Journal Papers

2018 Roger Granada, João Paulo Aires, **Juarez Monteiro**, Felipe Meneguzzi and Rodrigo C. Barros. Improving Action Recognition using Temporal Regions. In *JIDM*, volume 9, p. 108–123, 2018.

2018 Leandro Silva, Roger Granada, **Juarez Monteiro** and Duncan Ruiz. Fusing Scene Context to Improve Object Recognition. In *JIDM*, volume 9, p. 147–162, 2018.

Book Chapters

2019 **Juarez Monteiro**, Roger Granada, Felipe Meneguzzi and Rodrigo C. Barros. Using Scene Context to Improve Action Recognition. In *Lecture Notes in Computer Science, 2019. 1. ed., v.11401., 954-961p.*

Conference Papers

2023 **Juarez Monteiro**, Nathan Gavenski, Felipe Meneguzzi, and Rodrigo Barros. Self-Supervised Adversarial Imitation Learning In *IJCNN*, 2023.

2022 Nathan Gavenski, **Juarez Monteiro**, Roger Granada, Adilson Medronha, and Rodrigo Barros. How Resilient Are Imitation Learning Methods to Sub-optimal Experts? In *BRACIS*, 2022.

2020 **Juarez Monteiro**, Nathan Gavenski, Roger Granada, Felipe Meneguzzi, and Rodrigo Barros. Augmented Behavioral Cloning from Observation. In *IJCNN*, 2020.

2020 Nathan Gavenski, **Juarez Monteiro**, Roger Granada, Felipe Meneguzzi, and Rodrigo C. Barros. Imitating Unknown Policies via Exploration. In *BMVC*, 2020.

2020 Roger Granada, **Juarez Monteiro**, Nathan Gavenski, and Felipe Meneguzzi. Object-Based Goal Recognition using Real-World Data. In *MICAI*, 2020.

2018 João Paulo Aires, Roger Granada, **Juarez Monteiro**, and Felipe Meneguzzi. Norm Conflict Identification using Vector Space Offsets. In *IJCNN*, 2018.

2018 **Juarez Monteiro**, Roger Granada, João Aires, and Rodrigo C. Barros. Evaluating the Feasibility of Deep Learning for Action Recognition in Small Datasets. In *IJCNN*, 2018.

2018 **Juarez Monteiro**, Roger Granada, Rafael Pinto, and Rodrigo C. Barros. Beating Bomberman with Artificial Intelligence. In *ENIAC*, 2018.

2018 **Juarez Monteiro**, Roger Granada, Felipe Meneguzzi, and Rodrigo C. Barros. Using Scene Context to Improve Action Recognition. In *CIARP*, 2018.

2017 Roger Granada, Ramon F. Pereira, **Juarez Monteiro**, Rodrigo C. Barros, Duncan Ruiz and Felipe Meneguzzi. Hybrid Activity and Plan Recognition for Video Streams. In *PAIR-AAAI*, 2017.

2017 Roger Granada, **Juarez Monteiro**, Rodrigo C. Barros and Felipe Meneguzzi. A Deep Neural Architecture for Kitchen Activity Recognition. In *FLAIRS*, 2017.

2017 **Juarez Monteiro**, João Paulo Aires, Roger Granada, Rodrigo C. Barros, and Felipe Meneguzzi. Virtual Guide Dog: An Application to Support Visually-Impaired People through Deep Convolutional Neural Networks. In *IJCNN*, 2017.

2017 **Juarez Monteiro**, Roger Granada, Rodrigo C. Barros, and Felipe Meneguzzi. Deep Neural Networks for Kitchen Activity Recognition. In *IJCNN*, 2017.

2017 Renan Maidana, **Juarez Monteiro**, Roger Granada, Alexandre Amory, and Rodrigo C. Barros. Deep Neural Networks for Handwritten Chinese Character Recognition. In *BRACIS*, 2017.

2017 João Paulo Aires, **Juarez Monteiro**, Roger Granada, Felipe Meneguzzi, and Rodrigo C. Barros. Improving Activity Recognition using Temporal Regions. In *KDMiLe*, 2017.

2017 Leandro P. Silva, Roger Granada, **Juarez Monteiro**, and Duncan Ruiz. Using Scene Context to Improve Object Recognition. In *KDMiLe*, 2017.