Luckeciano Melo

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LuckecianoMelo • luckeciano • Last updated on July 28, 2022

I am a professional with a mixed background in research and engineering. In recent years, my main work applied Deep Learning and Reinforcement Learning algorithms for real-world scenarios at scale. My research curiosity is to **develop agents that learn behaviors through interaction, in an efficient, generalist, and adaptive way**. I believe that we can achieve this with **meaningful semantic representations** and **world models**, aligned with **inductive biases on high-level cognition**.

Education

MSc. in EECS, Aeronautics Institute of Technology (ITA) (3.73/4.00) 2017 – 2019
Thesis: Imitation Learning and Meta-Learning for Optimizing Humanoid Robot Motions
Best Master's Dissertation in Brazilian AI Awards 2019 (DATA-H)
Winner of the V Best MSc Dissertation and PhD Thesis Contest in Robotics (Brazilian Robotics Society)

BSc. in Computer Engineering, Aeronautics Institute of Technology (ITA) (3.51/4.00) 2014 – 2018
Acceptance Rate: 2.3%
Thesis: A Deep Reinforcement Learning Method for Humanoid Kick
Computer Engineering Best Thesis Award
Honors in Software Engineering in undergraduate and graduate departments

Other Relevant Courses
Machine Learning (Stanford, Coursera), Deep Learning Specialization (deeplearning.ai), NLP Specialization (deeplearning.ai), RL Course (UCL, online), Deep Reinforcement Learning (CS 285, UC Berkeley, online), Multi-Task and Meta-Learning (CS 330, Stanford, online), Full Stack Deep Learning (online lectures)

Industry Experience

Microsoft, Applied Scientist — Bing Search — Seattle, WA 2021 – Present
- Works with Multi-Modal Representation Learning for Web Data Semantic Understanding
- Leading efforts to scale HTML-based deep learning models to 400 billion documents
- Responsibilities: Data Engineering, Data Analysis and Feature Engineering, Model Development, Deployment and Monitoring

Microsoft, Software Engineer — Data and Integration Services for D365 — Vancouver, BC 2020 – 2021
- Worked building up a microservices-based infrastructure to enable data transfer and processing from SQL databases to Azure Data Lake at scale
- Comprises delivering high quality, scalable code for asynchronous, distributed, and multi-threaded applications in the context of SaaS in the cloud
- Other responsibilities: architectural discussions, code reviews, cluster and CI/CD pipelines management, livesite

Deep Learning Brazil Research Lab, Head of RL Research — Remote, Part-Time 2019 – 2021
- DeepFood Project: Worked implementing Deep Learning and RL models for Recommender Systems for a major player in food delivery. Released an open-source framework to model, train, and evaluate RL agents for marketplaces, with automated off-policy and fairness evaluation. Developed a contextual meta-bandit approach for model selection.
- PulseRL project: Led a team of 3 student researchers to develop an offline RL agent (PulseRL) based on the Conservative Q-Learning framework for Debt Collection. Deployed PulseRL in a production system to handle millions of users daily.
- Responsibilities: RL Core Research, RL applications with industry partners, Manage/Supervise teams of graduate students

Amazon Web Services, Software Development Engineer Intern — Cape Town, South Africa 2018
- Worked at the EC2 Core Platform, in the Host Placement Team
- Developed a Continuous Deployment Pipeline for the instances metering service, based on several testing mechanisms to evaluate metering data

VTEX, Software Engineer Intern — Rio de Janeiro, Brazil 2018
- Developed several features for the platform infrastructure (logs and monitoring, caching, throttling systems), developed microservices and managed Kubernetes clusters.

Pearson Education, Software Engineer Intern — Sao Paulo, Brazil 2016

Relevant Technical Skills

Core Skills	Artificial Intelligence (Deep Learning / Reinforcement Learning), Software Engineering, Optimization, Robotics
Research Areas	Reinforcement Learning (Offline RL, Meta-RL), Representation Learning
Programming	Python, C/C++; C# (.NET), Bash, SQL, Java, MATLAB
Frameworks	Pytorch, TF/Keras, numpy/matplotlib/pandas/sklearn, Azure/AWS/GCP, Kubernetes
OS	Linux, Windows, MacOS

Honors & Awards

Intel AI Student Ambassador	2018 – 2020
Selected to attend to Khipu: Latin American Meeting for AI	2019
1st place at Data Science Challenge at EEF (Kaggle's Competition)	2019
4th place at the RoboCup 3D Soccer Simulation Scientific Challenge (Sydney, Australia)	2019
2nd place in the Soccer 3D Simulation League in the Latin America Robot Competition	2015, 2016, 2017, 2018
6th, 9th, and 7th in the RoboCup 3D Soccer Simulation League	2016, 2017, 2019
1st place Microsoft Code Competition at ITA	2017
2nd Place Quero Education Hackathon for Lassie, the Learning Assistant	2017
3rd Place at Quero Education Hackathon for Ahoy!	2016
Scientific Competitions in High School Physics (5 medals), Chemistry (8 medals), Astronomy (2 medals)	2011 – 2013

Publications [Google Scholar, Semantic Scholar]

Representative publications that I am a primary author on are highlighted.

2022

1. *Transformers are Meta-Reinforcement Learners*
   Luckeciano Melo
   International Conference on Machine Learning (**ICML**) 2022

2. *Multi-Agent Reinforcement Learning for Strategic Decision Making and Control in Robotic Soccer through Self-Play*
   Bruno Brandão, Telma De Lima, Anderson Soares, **Luckeciano Melo**, and Marcos Maximo
   IEEE Access 2022

2021

3. *PulseRL: Enabling Offline Reinforcement Learning for Digital Marketing Systems via Conservative Q-Learning*
   Luckeciano Melo*, Luana Martins*, Bryan Oliveira*, Bruno Brandão, Douglas W Soares, and Telma Lima
   2nd Offline Reinforcement Learning Workshop at Neural Information Processing Systems (**NeurIPS**) 2021 (*co-lead authors, **Oral Presentation**)

4. *Learning Humanoid Robot Running Motions with Symmetry Incentive through Proximal Policy Optimization*
   Luckeciano Melo*, Dicksiano Melo*, and Marcos Maximo
   Journal of Intelligent and Robotic Systems 2021 (*co-lead authors)

2020

5. *MARS-Gym: Offline Reinforcement Learning for Recommender Systems in Marketplaces*
   Luckeciano Melo*, Marlesson RO Santana*, Fernando HF Camargo*, Bruno Brandão*, Anderson Soares, Renan M Oliveira, and Sandor Caetano
   Challenges of Real-World Reinforcement Learning at the 34th Conference on Neural Information Processing Systems (**NeurIPS**) 2020 (*co-lead authors, **Oral Presentation**)

6. *Contextual Meta-Bandit for Recommender Systems Selection*
   Luckeciano Melo*, Marlesson RO Santana*, Fernando HF Camargo*, Bruno Brandão*, Anderson Soares, Renan M Oliveira, and Sandor Caetano
   ACM Conference on Recommender Systems 2020 (*co-lead authors)

2019

7. *Bottom-Up Meta-Policy Search*
Luckeciano Melo and Marcos Maximo
Deep Reinforcement Learning Workshop in the 33rd Conference on Neural Information Processing Systems (**NeurIPS**) 2019

8. *Learning Humanoid Robot Running Skills through Proximal Policy Optimization*
Luckeciano Melo and Marcos Maximo
Latin America Robotics Symposium (LARS) 2019 (**LARS 2019 Best Paper Award**)

9. *Housing Prices Prediction with a Deep Learning and Random Forest Ensemble*
Bruno Klaus de Aquino Afonso, **Luckeciano Melo**, Willian Oliveira, Samuel Bruno da Silva Sousa, and Lilian Berton
ENIAC 2019

10. *A experiencia do grupo academico ITAndroids (The experience from ITAndroids academic group)*
Luckeciano Melo, Julio Cesar Filho, Felipe Pinheiro, and Maximo Marcos
Robotica Educacional: experiencias inovadoras na educacao brasileira (Educational Robotics: innovative experiences in brazilian education). Book Chapter (Penso Publisher) 2019

2018

11. *Learning Humanoid Motions through Deep Neural Networks*
Luckeciano Melo, Marcos Maximo, and Adilson Marques Cunha
Brazilian Humanoid Robot Workshop (BRAHUR) 2018

Repositories

luckeciano/transformers-metarl — ★10 — *Transformers are Meta-Reinforcement Learners (ICML 2022)* 2022
dlb-rl/pulse-rl — ★8 — *PulseRL – Enabling Offline Reinforcement Learning for Digital Marketing Systems via Conservative Q-Learning.* 2021
deeplearningbrasil/mars-gym — ★41 — *MARS-Gym – a benchmark framework for modeling, training, and evaluating RL-based recommender systems for marketplaces.* 2020
marlesson/meta-bandit-selector — ★8 — *Contextual Meta-Bandit for Recommender Systems Selection* 2020

Invited Talks

WhiRL Reading Group at Oxford June 2022
(Invited Talk) Transformers are Meta-Reinforcement Learners

Microsoft Research (Slides) June 2022
(Reading Group) Transformers are Meta-Reinforcement Learners

Microsoft (Slides) February 2022
(Invited Talk) PulseRL: Enabling Offline Reinforcement Learning for Digital Marketing Systems via Conservative Q-Learning

Deep Learning Brazil Summer School Feb 2018
Introduction to Deep Reinforcement Learning

Peer Review

Conference on Machine Learning (ICML) 2022
Conference on Neural Information Processing Systems (NeurIPS) 2022
Conference on Learning Representations (ICLR) (*Outstanding Reviewer) 2022*

Professional Activities

Program Committee – NeurIPS Offline Reinforcement Learning Workshop 2021

Other Academic and Research Experiences

ITAndroids (ITA Robotics Research Lab) 2015 – 2019
- Worked on Soccer 3D strategy. Worked on build up the C++ base code team in the first year. Developed algorithms to Path Planning, Robot's Active Vision and Positioning/Marking System.
- Taught fresh students in Software Engineering
- Developed humanoid robot skills for RoboCup 3D Soccer Simulation environment, using Deep Reinforcement Learning, Imitation Learning, Meta-Learning and Evolution Strategies

Undergraduate Research Mentor — ITA 2018
- Mentored a student in a research project to develop policies for multi-agent positioning using imitation learning from human feedback.

Teaching Assistant (Instructor) 2018
- Taught Deep Learning for graduate students in a course called CT-221: Neural Networks

Software Engineering Research Group (ITA) 2017
- Worked using Deep Learning for Facial Recognition in Biometric systems, replacing an Eigenfaces' solution with CNNs, improving Identification Rate from 40% to 90%
- Worked in feature engineering for credit card anti-fraud systems

Undergraduate Research at Software Engineering Research Group (ITA) 2014 – 2016
- Worked on Software Engineering research for agile methodologies.

Extracurriculars

Seattle Quidditch Club (Chaser) Present