Luckeciano Carvalho Melo

EDUCATION

Aeronautics Institute of Technology – ITA – São José dos Campos, SP (Brazil)

Msc. in Artificial Intelligence (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 V Best MSc Dissertation and PhD Thesis Contest in Robotics (Brazilian Robotics Society)
- GPA: 3.73/4.00

Aeronautics Institute of Technology – ITA – São José dos Campos, SP (Brazil)

BSc. in Computer Engineering (2014-2018)

- GPA (simple average): 3.51/4.00
- Thesis: A Deep Reinforcement Learning Method for Humanoid Kick – Best Thesis Award
- Honorable Mention in Software Engineering department and Software Engineering and Information Systems department (graduate level)

Other courses:

Machine Learning from Stanford (Coursera), Deep Learning Specialization (deeplearning.ai), RL Course by prof. David Silver (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)

WORK EXPERIENCE

Microsoft – Data and Integration Services for D365 F&O – Software Engineer

(Feb/20 – Present) Works building up microservices that enable data transfer/processing from SQL databases to Azure Data Lake at scale in Dynamics 365 Finance and Operations. It comprises delivering high quality, scalable code for asynchronous, distributed, and multi-threaded applications in the context of SaaS in the cloud, as well as architectural discussions, code reviews, clusters and CI/CD pipelines management, and livesite.

Deep Learning Brazil Research Group – AI Engineer

(May/19 – Jul/20) DeepFood: Worked implementing Deep Learning architectures for Recommender Systems for one of the biggest food delivery players in Brazil. Released MARS-Gym, an open-source framework to model, train, and evaluate agents for marketplace recommendation, with automated off-policy and fairness evaluation for reinforcement learning algorithms. Developed a contextual meta-bandit approach for Recommender Systems selection.

Amazon Web Services – Software Development Engineer Intern

(May/18 – Aug/18) Worked at EC2 Core Platform, in Host Placement team. Developed a Continuous Deployment Pipeline for instances metering service based on several testing mechanisms that uses metering data.

VTEX E-commerce Cloud Platform – VTEX IO – Back-end Engineer (Intern)

(Feb/18 – May/18, Aug/18 - Dec/18) Developed Logs and Monitoring features for Go web services. Developed HTTP cache and throttling for requests router. Developed AB Testing support in VTEX IO infrastructure.
(Aug/18 – Dec/18) Worked as Infrastructure Engineer developing .NET and Go micro-services and managing Kubernetes Clusters.

Pearson Education - **Software developer/Product designer (Intern)**

(Jan/16 – Feb/16) Worked on software development in an anti-piracy project (Python, mySQL) and worked on product design in customer hypothesis validation.

MAJOR PROJECTS

ITAndroids (Robotics Group at ITA) - **Software Developer/AI Researcher - http://www.itandroids.com.br**

(Mar 2015 – Sep 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. Nowadays, works with optimization tasks to robot's walking and kick using Deep Reinforcement Learning.

Deep Reinforcement Learning for Humanoid Robot Motions
(Mar 2018 – Sep 2019) Research project where I developed humanoid robot skills for RoboCup 3D Soccer Simulation environment, using Deep Reinforcement Learning, Imitation Learning, Meta-Learning and Evolution Strategies – see the publications below.

STAMPS – Software Engineer - https://github.com/stamps-tr and https://github.com/projetostampsacademico
(Mar 2017 – Nov 2017). Designed and developed an intelligent diagnosis system based on symptoms similarity and an IoT solution for facial recognition in a rescue robot.

ForAnyReality - ScrumMaster/Software Engineer (Co-Founder).
(Mar 2015 – Oct 2015) Worked with partners in 3D game development of virtual reality applied to Science Education (Unity 3D, C#). The principal project was aMaze (see further information in https://www.facebook.com/foranyreality/).

TECHNICAL SKILLS

Core Engineering Skills	Artificial Intelligence, Software Engineering, Optimization, Robotics
Programming Languages	C/C++, Python; C# (.NET), Java, Bash, SQL, MATLAB, Go, Ruby
Frameworks and Tools	Keras/Tensorflow/PyTorch, Kubernetes, AWS/Azure/GCP
Operating Systems	Linux, Windows, MacOS

AWARDS AND LEADERSHIP

- Intel AI Student Ambassador - https://software.intel.com/en-us/ai-academy/ambassadors
- Accepted to attend to Khipu: Latin American Meeting for AI 2019 (https://khipu.ai/)
- Best undergraduate thesis of ITA's Computer Engineering Class of 2018.
- Speaker of Speech Recognition and Deep Reinforcement Learning at Deep Learning Brazil Summer School 2018.
- 5th place at NeurIPS 2019: Learn to Move – Walk Around (AICrowd Competition).
- 1st place at Data Science Challenge at EEF 2019 (Kaggle's Competition).
- 2nd in the Soccer 3D Simulation League in the Latin America Robot Competition, 2015, 2016, 2017 and 2018.
- 6th, 9th and 7th place in the Soccer 3D Simulation League at RoboCup 2016, 2017 and 2019.
- 4th place in the RoboCup 3D Soccer Simulation Scientific Challenge (Sydney, Australia), July 2019.
- 1st place at Microsoft Code Competition at ITA (2017);
- 2nd place at Quero Educação Hackathon for "Lassie – The Learn Assistant", 2017; (https://github.com/mknarciso/lassie)
- 3rd Place at the Quero Educação Hackathon for "Ahoy!", 2016. (https://github.com/AcademiaBarbaNegra)
- Scientific Competitions on High School (2011 to 2013): Physics (5 medals), Chemistry (8 medals), Astronomy (2 medals).

ACADEMIC AND RESEARCH EXPERIENCE

Undergraduate Research Advisor – ITA
(Aug/18 – Aug/19) Advised an undergraduate student in a research project that developed policies for multi-agent positioning in robot soccer using Supervised Learning from human knowledge.

Assistant Professor – ITA
(Aug/18 – Dec/18) Taught Deep Learning for graduate students in MSc and PhD level, in the course called CT-221: Neural Networks.

Software Engineering Research Group (ITA) – Research Collaborator
(Mar/17 – Nov/17) Worked using Deep Learning to Facial Recognition for Biometric systems, replacing from Eingenfaces' solution to FaceNet (improved Identification Rate from 40% to 90%); also worked in feature engineering for credit cards anti-fraud systems.

Scientific Project on Software Engineering (CNPq) – **Undergraduate Researcher**
(Aug/14 – Aug/16) 1600 hours research in Agile Methodologies in Safety Critical systems and techniques for scaling agile (SAFe, DAD, SA@S – Spotify, LeSS) for big and non-collocated teams.

PUBLICATIONS

[1] **Melo, L.C.*;** Santana, M.R.O*; Camargo, F.H.F.*; *et al. MARS-Gym: Offline Reinforcement Learning for Recommender Systems in Marketplaces. In: Offline Reinforcement Learning Workshop at Neural Information Processing Systems **(NeurIPS)**, 2020.*

[2] **Melo, L.C.*;** Santana, M.R.O*; Camargo, F.H.F.*; *et al. Contextual Meta-Bandit for Recommender Systems Selection. In: RecSys '20: Proceedings of the 14th ACM Conference on Recommender Systems. Virtual event, Brazil, 2020.*

[3] **Melo, L. C**.; Maximo, M. R. O. A.; Cunha, A. M. *Bottom-Up Meta-Policy Search. In: Deep RL Workshop in 33rd Conference on Neural Information Processing Systems (**NeurIPS)**. Vancouver, Canada, 2019.* Available in: https://arxiv.org/abs/1910.10232

[4] **Melo, L. C**.; Maximo, M. R. O. A. *Learning Humanoid Robot Running Skills through Proximal Policy Optimization. In: Proceedings of the XVI Latin America Robotics Symposium (LARS 2019). Rio Grande, Brazil, 2019.* Available in: https://arxiv.org/abs/1910.10620 **(LARS 2019 Best Paper Award)**

[5] **Melo, L. C**.; Maximo, M. R. O. A.; Cunha, A. M. *Learning Humanoid Motions through Deep Neural Networks. In: Proceedings of the II Brazilian Humanoid Robot Workshop (BRAHUR).* Available in: https://fei.edu.br/brahurbrasero2019/proceedings.html.

[6] **Melo, L. C**.; Maximo, M.R.O.A.; Cunha, A.M. *A Deep Reinforcement Learning method for Humanoid Kick Motion.* Bachelor's Thesis. Available in https://github.com/luckeciano/deep-rl-undergrad-thesis/blob/master/tese.pdf

[7] **Melo, L.C.;** Maximo, M.R.O.A.; Cunha, A.M. *Imitation Learning and Meta-Learning for Optimizing Humanoid Robot Motions*. Master's Thesis.

[8] Afonso, B.K.A.; **Melo, L.C**. Oliveira, W.D.G.; Sousa, S.B.S., Berton, L. *Housing Price Predictions with a Deep Learning and Random Forest Ensemble. In: Proceedings of 16th National Meeting on Artificial Intelligence and Computational Intelligence.* Salvador, Brazil, 2019. Available in: http://www.bracis2019.ufba.br/Camera_Ready/199010_1.pdf

[9] **Melo, L.C**.; Filho, J.C.F.; Maximo, M.R.O.A., Pinheiro, F.C.R. *A experiência do grupo acadêmico ITAndroids* (The experience from ITAndroids academic group). In: Silva, R. B.; Blikstein, P. *Robótica Educacional: experiências inovadoras na educação brasileira* (Educational Robotics: innovative experiences in brazilian education). Editora Penso, pp.228-248.

[10] **Melo, L.C**.; *et al. Improving Dianosis in Health Care Systems.* In *Proceedings of the 2018 International Conference on Health Informatics & Medical Systems – HIMS.* Las Vegas, USA, 2018. Available in: https://csce.ucmss.com/cr/books/2018/LFS/CSREA2018/HIM4105.pdf

[11] **Melo, L. C**.; Monteiro, C.; Cunha, A. M. *Uma análise de escalabilidade de métodos ágeis em grandes projetos com múltiplos times* (An Analysis of scalability of Agile Methods on big teams with multiples teams). In *Proceeding of the XXI ITA'S Undergraduate and Graduate Research Meeting (ENCITA).* São José dos Campos, Brazil, 2016. Available in: https://github.com/luckeciano/Research-Agile- Methods/blob/master/Paper%20PIBIC%20ScalingAgile.pdf

[12] **Melo, L. C**.; Monteiro, C.; Cunha, A. M. *Uma análise da utilização de Metodologias Ágeis envolvendo o desenvolvimento de Safety- Critical Software* (An Analysis of the usage of Agile Methodologies involving the development of Safety-Critical Software). In: *Proceedings of the XX ITA'S Undergraduate and Graduate Research Meeting (ENCITA).* São José dos Campos, Brazil, 2015. Available in: https://github.com/luckeciano/Research-Agile-Methods/blob/master/Paper%20PIBIC%20AgileSafetyCritical.pdf.