Túlio Fernandes de Almeida

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EDUCATION

Edmond and Lily Safra International Institute of Neurosciences	Macaíba, RN
Master in Neuroengineering	*Aug. 2019 – Jul. 2021*
Pontifical Catholic University of Minas Gerais	Belo Horizonte, MG
Bachelor of Physiotherapy	*Aug. 2014 – Jul. 2019*
CECON.TI	Belo Horizonte, MG
Digital Games Programming Technician	*Fev. 2012 – Nov. 2014*

EXPERIENCE

Master Student — Aug. 2019 – Jul. 2021
Edmond and Lily Safra International Institute of Neurosciences — *Macaíba, RN*

- During my master I work with data analysis using Python, performing multi-modal data fusion, application of machine learning algorithms, video and neural data analysis.
- Experience in animal behavior, electrophysiological data analysis and surgery for electrode implantation.
- I also had the opportunity to participate in the writing and submission of funding proposals with the approval of two grants.

Member of Machine Learning Research Group — Mar. 2020 – Present
Edmond and Lily Safra International Institute of Neurosciences — *Macaíba, RN*
Study group for weekly discussion of machine learning and deep learning articles and techniques. During these discussions we developed a series of projects.

- We developed projects and implemented machine learning techniques (pose estimation, autoencoder, SVM, t-SNE, GAN and others).
- Developed jupyter/colab notebooks tutorials.

Undergraduate Experience — Aug. 2015 – Jul. 2019
Pontifical Catholic University of Minas Gerais — *Belo Horizonte, MG*

- Experience in multidisciplinary work with data collection with humans, performing physical assessment and application of questionnaires.
- Class monitor in different subjects, helping other students in different contents.
- Practice with the application of electrotherapeutic resources.

Technical Course — Fev. 2012 – Nov. 2014
CECON.TI — *Belo Horizonte, MG*

- Development of game projects using Unity and Unreal game engines.
- Experience in programming and 3D object modeling using Blender.

PROJECTS

PyRat — Aug. 2020 – Present
Edmond and Lily Safra International Institute of Neurosciences — *Macaíba, RN*
In this project, we use DeepLabCut to correlate brain oscillations and behavior, evaluate the object recognition task, quantifying the time spent on each object, detachment speed, head orientation and path taken during the task. For this, Python in Rodent Analysis and Tracking (PyRat) was developed, a python library to analyze DeepLabCut outputs.

JAMA/PyJama — Aug. 2019 – Present
Edmond and Lily Safra International Institute of Neurosciences — *Macaíba, RN*
JAMA is an open access device designed to perform motion analysis using inertial measurement units and microcontrollers. PyJama is a python library for analyzing human kinematics data. Aimed at analyzing data from IMU's, MIMU's, data from optical devices.

Technical Skills

Programming Languages: Python, MATLAB, C/C++
Developer Tools: Github, Google Colab, VS Code, Visual Studio, Platform IO, Arduino, Jupyter, Anaconda
Libraries: pandas, NumPy, Matplotlib, Bokeh, FastAI, PyTorch, FastAI, TensorFlow, scikit-learn, flask, django

Publications

de Almeida, T.F.; Morya, E.; Rodrigues, A.C.; de Azevedo Dantas, A.F.O. (2021) **Development of a Low-Cost Open-Source Measurement System for Joint Angle Estimation**. Sensors, 21, 6477. https://doi.org/10.3390/s21196477

Dantas, A. D., Dantas, A. F., Almeida, T. F., Dórea, C. E. (2020). **Design of reduced complexity controllers for linear systems under constraints using data cluster analysis**. International Journal of Systems Science, 1-16. doi.org/10.1080/00207721.2020.1795948

Almeida TF, de Araújo AR (2020) **Factors that Influence Injuries Occurrence in Jiu-Jitsu Competitors**. Int J Sports Exerc Med 6:164. doi.org/10.23937/2469-5718/1510164

Almeida, T. F., de Oliveira, L., de Leucas, C. B. (2018). **University extension: experience report about aquatic physical therapy during graduation**. Revista Família, Ciclos de Vida e Saúde no Contexto Social, 6(3), 494-499. doi:10.18554/refacs.v6i3.364

Almeida, T. F., Ferreira, A. L. C., Moreira, J. D. P., de Oliveira, H. L., dos Santos, D. H. S., de Leucas, C. B (2018).**Experience report: management of a project**(In Portuguese: Relato de experiência extensionista: gestão do Projeto Qualidade de Vida para Todos). Conecte-se! Revista Interdisciplinar de Extensão, 2(3), 149-154.

Leucas, C. B., Ferreira, A. L. C., Cecotti, K. A. V., de Oliveira, L., Puygcerver, R. M. M., Almeida, T. F. (2017). **Analyzing the quality of life of people with disabilities through the Problem Assessment Protocol for Rehabilitation** (In Portuguese: Analisando a qualidade de vida de pessoas com deficiência de um projeto de extensão por meio do Protocolo de Levantamento de Problemas para a Reabilitação). Conecte-se! Revista Interdisciplinar de Extensão, 1(1), 85-94.

In Proceeding

Almeida, T.F; Spinelli, B.G; Gonzalez, M.C; Lima, R.H; Rodrigues, A.C (2021). **PyRat: An open source python library for quantifying animal behavior. Accepted in Frontiers in Neuroscience.**

Oral Presentations

Neto, D.L.A; Dantas, A.F.O.A; Almeida, T.F.; Lima, J.A; Morya, E. **Comparison of Controller's Performance for a Knee Joint model based on Functional Electrical Stimulation Input**. In 2021 10th International IEEE/EMBS Conference on Neural Engineering (NER), 2021, pp. 836-839, doi: 10.1109/NER49283.2021.9441233.

Almeida, T. F.; Leucas, C. B. ; Silva, L.O ; Pereira, D. C. T. **Manufacture of a Low-Cost Boccia Kit**. In: XXI Congresso Brasileiro de Ciências do Esporte e VIII Congresso Internacional de Ciências do Esporte, 2020, Nataç. Anais do XXI Congresso Brasileiro de Ciências do Esporte e VIII Congresso Internacional de Ciências do Esporte. Porto Alegre: CBCE, 2019. v. 1. p. 1-3.

Silva, L.O ; Ferreira, L. D. ; Almeida, T. F. ; Leucas, C. B. . **Prática da modalidade paralímpica Futebol de Cinco na Extensão Universitária: Relato de experiência.** In: XXI Congresso Brasileiro de Ciências do Esporte e VIII Congresso Internacional de Ciências do Esporte, 2020, Natal. Anais do XXI Congresso Brasileiro de Ciências do Esporte e VIII Congresso Internacional de Ciências do Esporte. Porto Alegre: CBCE, 2019. v. 1. p. 1-2

Almeida, T. F.; Leucas, C. B. ; Silva, L.O ; Campos, C. D. . **Dispositivo de tecnologia assistiva para realização de transferências de pessoas comd eficiência em ambientes com piscina**. In: VI Congresso Paradesportivo Internacional, 2018, São Paulo. Anais do VI Congresso Paradesportivo Internacional - Comitê Paralímpico Brasileiro. São Paulo: Sociedade Brasileira de Medicina do Esporte, 2018. v. 24. p. 69-69