

Túlio Fernandes de Almeida

+55 31 992943599 | tuliofalmeida@hotmail.com | [Site](#) | [Linkedin](#) | [GitHub](#) | [Google Scholar](#) | [ResearchGate](#)

EDUCATION

Edmond and Lily Safrá International Institute of Neurosciences

Master in Neuroengineering

Macaíba, RN

Aug. 2019 – Jul. 2021

Pontifical Catholic University of Minas Gerais

Bachelor of Physiotherapy

Belo Horizonte, MG

Aug. 2014 – Jul. 2019

CECON.TI

Digital Games Programming Technician

Belo Horizonte, MG

Fev. 2012 – Nov. 2014

EXPERIENCE

Technical Support

Edmond and Lily Safrá International Institute of Neurosciences

Set. 2021 – Present

Macaíba, RN

- I'm working analyzing electrophysiological data using signal processing techniques, brain connectivity and machine learning. Also, assisting in writing scientific articles

Master Student

Edmond and Lily Safrá International Institute of Neurosciences

Aug. 2019 – Jul. 2021

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

Edmond and Lily Safrá International Institute of Neurosciences

Mar. 2020 – Present

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

Pontifical Catholic University of Minas Gerais

Aug. 2015 – Jul. 2019

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.

PROJECTS

PyRat

Edmond and Lily Safrá International Institute of Neurosciences

Aug. 2020 – Present

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 tracking 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.

Brain connectivity in rats with epilepsy

Sept. 2021 – Present

Edmond and Lily Safra International Institute of Neurosciences

Macaíba, RN

This project aims to characterize the effects of pentylentetrazole on brain connectivity (electrophysiology).

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, C/C++, Pascal, Med State Notation

Developer Tools: Github, Google Colab, VS Code, Platform IO, Arduino, Jupyter, Anaconda

Libraries: pandas, NumPy, Matplotlib, Bokeh, FastAI, PyTorch, FastAI, TensorFlow, scikit-learn, flask

Equipaments: Plexon, Blackrock, Stereotaxic, Med associates behavioral setup

PUBLICATIONS

Almeida, T.F.; Spinelli, B.G; Gonzalez, M.C; Lima, R.H; Rodrigues, A.C (2022). **PyRat: An open-source python library for quantifying animal behavior.** In press in Frontiers in Neuroscience

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.** Conecte-se! Revista Interdisciplinar de Extensão, 2(3), 149-154.

Leucas, C. B., Ferreira, A. L. C., Cecotti, K. A. V., de Oliveira, L., Puygserver, R. M. M., Almeida, T. F. (2017). **Analyzing the quality of life of people with disabilities through the Problem Assessment Protocol for Rehabilitation.** Conecte-se! Revista Interdisciplinar de Extensão, 1, 85-94.

CONFERENCE PUBLICATIONS

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.

IN PREPARATION

Almeida, T.F; Borges, L. H. B; Dantas, A.F.O.A (2022). **Development of an IoT Closed Loop FES Device for Human Machine Interface.** In proceeding in Sensor journal.

Almeida, T.F; Rodrigues, A.C (2022). **Characterization of connectivity before and after pentylentetrazole induced seizures.** In proceeding in eLife journal.

REVIEWER

The Journal of Open Source Software (JOSS)