

# Allan Marcio Frederick

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[LinkedIn profile](#) [Personal website](#)

## EDUCATION

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### Bachelor of Science, Electrical Engineering

December/2021

Technical Core: Data Science and Information Processing

The University of Texas at Austin

**Relevant Coursework:** Neural Engineering, Brain-Computer Interaction, Data Science, Machine Learning

## PROFESSIONAL EXPERIENCE

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### Laboratory Technician, Gonzalez-Lima Lab at The University of Texas Austin

February/2022 – Present

- Lead the design and build of an LED neuromodulation device to improve brain function and cognition; involves PCB design, power testing, hardware hacking, embedded systems development
- Perform signal processing and analysis of EEG data using MATLAB to observe effects of infrared laser light on neural oscillations
- Participate in weekly meetings to delegate tasks and to provide updates on current projects

### Laboratory Research Intern, Gonzalez-Lima Lab at The University of Texas Austin

June/2021 – August/2021

- Partnered with graduate students to collect and analyze EEG data for an experiment involving stimulation of the prefrontal cortex with near-infrared laser light to improve brain function and cognition

### Software Engineering Intern, IpayYou

June/2019 – August/2019

- Developed software tools ranging from front-end to back-end for company administrators to increase efficiency and make future collaboration more streamlined

## APPLIED ACADEMIC EXPERIENCE

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### Error-related Potentials Decoder, The University of Texas Austin

October/2021 – December/2021

- Created a decoder to classify error-related potentials using signal processing and machine learning techniques conducted in MATLAB and Python
- Configured data sets for training and testing of models in an efficient manner by use of code modularity
- Streamlined readability by evaluating and visually representing performance of models via figures for easy understanding

### Brain Stimulation Headset, The University of Texas Austin

February/2021 – December/2021

- Collaborated in a team of 5 to design and build a wearable LED headband device to improve brain function and cognitive state using infrared LEDs
- Programmed firmware using C++, ensuring proper functionality of the microcontroller by implementing treatment operation sequence, ambient light detection, temperature detection, and blood oxygen level detection
- Led and coordinated meetings with faculty sponsor to relay information, monitor progress, and present slides and system design reports

## SKILLS

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Programming: MATLAB, Python, Jupyter notebook, C/C++, C#, Java, OSX/Linux command line, EAGLE Autodesk

Applications: Machine-learning, digital signal processing, embedded systems, software development, PCB design

Certifications: CITI Human subject research for social/behavioral researchers

Languages: Fluent in Portuguese, Spanish