MATEUS ALVES DA ROCHA

Brazilian ◇ Single ◇ Date of Birth: 06/07/1992

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Santa Maria, Brasília, DF - Brazil

HARDWARE/FIRMWARE ENGINEER

Electronic Engineer with over 1 year of experience in embedded systems. I am prepared for new challenges in which I can use all my knowledge and skill in developing hardware and firmware solutions. I aim to contribute to the achievement of the company goals and to the professional development of my work team.

TECHNICAL SKILLS

Programming languages	C/C++, Python, Assembly, Java, MATLAB
Softwares & tools	Esp32/Esp8266, Arduino, Raspberry Pi, MSP430, FPGA, Proteus, EAGLE, Kicad, Fusion 360, SolidWorks, Github, CATIA, LaTeX, MS office, MS Project
Languages	Portuguese (Native Speaker), English (Fluent)

EDUCATION

University of Brasilia *December 2018.*
Major: Bachelor of Electronics Engineering

Wayne State University *August 2015 - May 2016*
Exchange program by Ciências Sem Fronteiras

WORK EXPERIENCE

E-lastic *January 2019 - Present*
Hardware/Firmware Development Engineer

· **Development of PCB version 2.0 of the company's main product using Kicad software:**

- By reducing the components and performing a routing focused on the efficiency of the PCB physical space use, it was possible to reduce the production cost by more than 20%;
- New PCB version with an ESP32 microcontroller capable of Wi-Fi and Bluetooth connection, while the previous one uses the Attiny84 MCU which only provides Bluetooth connection;
- User interaction through RGB LED controlled by PWM outputs;
- MCU programming performed in C/C++ language with some syntax modifications typical of Atmega328P MCU programming;
- New features were added to the program to make it more reliable. For example: The inclusion of the Watchdog timer (WTD) tool to ensure that the system will not be stuck due to firmware bugs; Implementation of interrupt for the button that indicates when the MCU should enter or exit Deep Sleep mode; Upgrading the firmware through Wi-Fi communication by receiving the binary file from the server - over the air (OTA).

· **Development of circuit to turn on and off company lights using ESP8266:**

- Through Wi-Fi communication, the MCU reads a PHP file stored on the server containing the desired lighting state information at a given time;
- Additionally, the system has WTD timer for possible crashes and OTA firmware upgrades.

· **Testing, calibration and maintenance of company's product:**

- When receiving a batch of PCB, the Attiny84 microcontroller is programmed and then tests are performed to ensure correct operation using bench equipment;
- The product is calibrated and the optimal value of the calibration constant used in the firmware is set;
- It is performed the maintenance of equipment returning from customers presenting defects using precision equipment such as multimeters, oscilloscope, power supplies, soldering iron, etc.

· **Other activities:**

- Implementation of version control of developed firmware - Git;
- Negotiation with Chinese PCB suppliers;
- Technical support to customers;
- 3D Printer Handling and Slicer Software

E-lastic   *June 2018 - December 2018*
Electronic Engineer Intern

· **Prototyping Circuit Timer for Powering Raspberry Pi 3:**

- Manual welding of PCBs with SMD components (0805);
- Maintenance of defective boards using bench equipment: oscilloscope, multimeter, power supplies, etc;

· **Prototyping monitoring system for motorcyclists from a commercial camera:**

- With the acquisition of a 360 camera, a new case designer was made in order to make it less noticeable as per customer request. To reach this result, it was necessary to disassemble the system and make connections directly in the circuit;

· **3D printer handling and slicer software:**

- Creation of STL parts for eventual prototypes using Fusion 360 software;
- Print configuration using Simplify 3D software;

· **Other activities:**

- Inventory monitoring of electronic products;
- Assembly and maintenance of products;

LaBCert   *June 2017 - June 2018*
Electronic Engineer Intern

· Development of test instruments for certification of electromedical equipment: circuit design using EAGLE; prototyping of the circuit in double-sided PCBs using the phototransfer technique; SolidWorks modeling of the case to contain the circuit; development of multimedia material for training new employees based on ABNT IEC 60601-1 standard.

University of California, Los Angeles *May 2016 - August 2016*
Volunteer Undergraduate Researcher

· Development of improvements to a smartphone app written in C# language by generating user interaction screens to control the amount of photos taken by the app. Development of scripts in Matlab for processing images obtained with the smartphone.

University of Brasilia *January 2014 - April 2017*
Undergraduate Researcher

· **Saddipe - Diagnostic Assistance System for Peritoneal Dialysis: M-Health Technology for the Evaluation of Turbidity of Dialyzed Fluid:**

- Electronic circuit development and programming of user interaction interface using a TFT display for the Arduino microcontroller.

Period: October 2016 - April 2017.

· **Hardware development of collecting signals through mesh of eletrodos using the eletromiography technique (EMG) for amputees active prosthesis adaptation:**

- Programming code to the Arduino platform for acquisition of analog voltages generated by muscle contractions; Programming code for storing the voltages in a SD card; Fabrication of printed circuit boards from designing the layout and arrangement of the components to the welding; Assembly of printed circuit boards in portable containers; MATLAB script development for visualization of voltages and comparison of values with data obtained using a digital oscilloscope

Period: April 2015 - August 2015.

· **Geo-statistical and Sonorous Information System of Dengue fever:**

- Development of microcontroller code responsible for moving a platform in a Cartesian system; Development of the code to capture the images via an USB microscopic camera; Scientific paper published.

Period: January 2014 - December 2014