

Eva Esteban

ELECTRICAL AND COMPUTER ENGINEER

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Experience

OpenBCI

New York, US

SOFTWARE ENGINEER

Oct 1 - PRESENT

- Working on a VR headset with biosensor integration, including EEG, EMG, EDA, PPG, and eye-tracking. Using C/C++, Python, brainflow library and Doxygen to develop, test and document the firmware. Bringing up hardware and integrating it with the firmware.
- Developing adaptive VR experiences using biometric data in Unity and C#.
- Providing technical customer support, completing customer interviews and running social media campaigns.

COMPUTER ENGINEERING INTERN

Jul 1 - Oct 1

- Developed a system using C/C++, Python and brainflow in Linux to control the computer keyboard and mouse using EMG signals.
- Worked on a light automation system using EEG signals. The scripts were written in Python.

Cornell University

New York, US

ROBOTICS RESEARCH INTERN

May 2020 - Aug 2020

- Worked in a team to develop an autonomous trash-picking robot using a Turtlebot3 Waffle Pi.
- The algorithms implemented include path-planning, maze-solving and SLAM. They were developed using ROS, C/C++, Python, Gazebo, RViz and MoveIT in Linux.

General Electric Healthcare

Buckinghamshire, UK

SOFTWARE ENGINEERING INTERN

Jul 2017 - Aug 2018

- Presented neurology work "Identification of FTD Candidates in MCI-SNAP Groups by Cortical Thickness Analysis" at the 2018 AAIC and EANM Conferences.
- Developed a tool using C#, Model-View-ViewModel (MVVM), Test Driven Development (TDD) and .NET to mask patient information in DICOM images.
- Developed a VR application to train medical professionals using Unreal Engine 4.
- Completed 'Neuroanatomy for Imagers' course at King's College London, gaining knowledge on the human brain.
- Gained 5+ General Electric Impact Awards.
- Presented VR applications at the Imperial College London Careers Fair as a STEM Ambassador.
- Organized SCRUM software development workshops for young students as a GirlsGetSET and GE Charity representative.

Unipeers

New York, US

CO-FOUNDER

Jun 1 - PRESENT

- Founded and launched Unipeers, a non-profit community to help students apply to top US universities. Recruited 200+ members in the first 2 months. Successfully led a team of volunteers and a social media campaign resulting in 200+ followers.

Education

Cornell Tech at Cornell University

New York, US

MASTER OF ENGINEERING IN ELECTRICAL AND COMPUTER ENGINEERING

Aug 2019 - May 2020

- GPA 4.07/4.3.
- Merit Scholarship.
- Student Spotlight.

University of Surrey

Surrey, UK

BACHELOR OF ENGINEERING IN ELECTRONIC ENGINEERING WITH COMPUTER SYSTEMS

Sep. 2015 - July 2019

- GPA: 4.0/4.0.
- Graduated with First Class Honours.
- Student of the Year 2019 HC.
- Surrey's Top Achievers Recognised and Supported (STARS) 2016 and 2017 awards.
- BAE Systems Applied Intelligence Prize finalist.
- Women's Engineering Society Committee.

Projects

Bluetooth Low Energy Light Sensor

PROJECT LINK

- Designed and developed a low power wearable sensor that records the intensity of light at different wavelengths and the temperature. It stores this information together with user input in a mobile application and in a MySQL database. The PCB was designed using Eagle. The sensor code was written in C running on an ATmega328P, the application in Java, and the transmission scripts in PHP.

Mind-Controlled Wheelchair

PROJECT LINK

- Developed a prototype for an EEG-controlled wheel for a wheelchair to aid paralyzed individuals. The code was written in C running on an ATmega328P.

Computer Tank Maze Game

PROJECT LINK

- Developed a computer game using OpenGL, C++ and Python where the player drives a tank to collect tokens in a maze within a time limit. Implemented collision detection, shading and sound effects.

FM Receiver

PROJECT LINK

- Developed an FM radio receiver using an FM chip (AR1010) and an audio amplifier (TDA2822). The FM receiver was controlled using a PIC and the code was written in Assembly.

EEG Meditation Tracker

PROJECT LINK

- Developed a prototype that uses EEG data to calculate how long a user's mental relaxation streaks are and display their highest score of the day. The code was written in C running on an Arduino.

Gesture Recognition System

PROJECT LINK

- Trained Hidden Markov Models (HMMs) in Python to identify 6 different arm motion gestures in real time. The data used to train the models were readings from an IMU.

Chair Posture Tracker

PROJECT LINK

- Developed a device that measures, logs and displays the percentage of time that you spend sitting incorrectly. The data was logged in an EEPROM and the code written in C.

ASIC for Music Synthesizer

PROJECT LINK

- Designed the ASIC for the amplitude envelope section of a virtual analog music synthesizer. The code was written in Verilog and Matlab. The simulations were performed in ModelSim.

Reinforcement Learning

PROJECT LINK

- Implemented Reinforcement Learning algorithms in Python such as Policy Iteration, Q-Learning and REINFORCE to solve multiple OpenAI Gym environments.

Neural Network for Speech Denoising

PROJECT LINK

- Trained a neural network using Matlab to identify and remove background noise from speech signals with a Mean Square Error (MSE) of 0.0029. The training data was preprocessed using signal transforms such as DCT and STFT.

Image Search Engine

PROJECT LINK

- Built a computer vision image search engine to retrieve images from a database similar to an input image query. The tool was developed and tested using Matlab.

Fall Detection Wearable

PROJECT LINK

- Built a low-cost wearable device designed for the elderly population. The device detects a fall and alerts an emergency contact via SMS messaging. The PCB was designed using Eagle. The sensor code was written in C and the Android application in Java.