

# Adrián Constante

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## EDUCATION

### MSc. Computer Science

Zapopan, Jalisco | Sep 2019 - Sep 2021

CENTRO DE INVESTIGACIÓN Y ESTUDIOS AVANZADOS DEL IPN

**Coursework:** Software Engineering, Data Structures and Algorithms, Distributed Systems, Cryptography, Computer Networks, Machine Learning, High Performance Computing.

### BSc. Biomedical Engineering

Mazatlán, Sinaloa | Sep 2015 - Dec 2018

UNIVERSIDAD POLITÉCNICA DE SINALOA

**Coursework:** Image and Signal Processing, Analog Desing, Logic Desing, Databases, OOP.

## WORK EXPERIENCE

**HAVVOX IT AND DIGITAL INNOVATION | SOFTWARE DEVELOPER** Mazatlán, Sinaloa | March 2022 - March 2023

- El Proyecto Evolución se enmarca en el programa de transformación de mediano – largo plazo de Grupo Calidra que busca modernizar los servicios de TI, adoptar nuevas tecnologías que apalanquen la transformación organizacional, integrar aplicativos corporativos, consolidar una arquitectura de datos que facilite la toma decisiones a todo nivel.

**CONSEIL EUROPÉEN POUR LA RECHERCHE NUCLÉAIRE | RESEARCH ASSISTANT** Meyrin, Switzerland | Nov 2018 - Dec 2018

- Full teamwork activities to develop an enhancement for AD and V0 ALICE's detectors, the goal was to detect more particles.
- Measures were done to proof our proposed sensor could be used. Pure-teamwork between programmers, electronic engineers and physicists.

**UNIVERSIDAD AUTÓNOMA DE SINALOA | RESEARCH ASSISTANT** Culiacán, Sinaloa | Sep 2018 - Oct 2018

- An electronic board with a 10-bits 1Gbps LVDS ADC was repaired.
- We developed the LVDS and HSMC protocol on FPGA to read data from the repaired board.

**CENTRO DE INVESTIGACIÓN Y ESTUDIOS AVANZADOS DEL IPN | RESEARCH ASSISTANT (RA)** Zapopan, Jalisco | Nov 2017 - Dec 2017

- We developed the control for a haptic robot arm to help kids with rehabilitation of their entire superior members.

## MAJOR PROJECTS

### ELECTRONIC HEALTH RECORD SYSTEM(2020)

BLOCKCHAIN, SOLIDITY

Full teamwork activities to develop a database about EHR, ensuring the fidelity and secrecy of patient data. It has a hierarchy system about who can CRUD patient and medical workers data. My main task was to develop the Ethereum Smart Contracts to achieve this feature.

ESC were developed in Solidity language with Truffle framework. The Kovan Ethereum testnet and IPFS were used for backend deployment.

### FACIAL GESTURE-DRIVEN WHEEL CHAIR(2018)

COMPUTER VISION, CNN, PYTHON

A special electric wheelchair was developed for quadriplegic people using computer vision and deep learning (CNN). It was able to move with facial gestures like moving head in some directions.

We developed the entire dataset with face images. We used and trained a PyTorch image classifier, ResNet18, then we developed the electronics needed.

### SEAHAWK: SECURITY FOR MAZATLAN'S BEACHES(2018)

COMPUTER VISION, CNN, PYTHON

It was a computer vision system able to recognize if people were off the coast. The main idea was to help lifeguards in Mazatlan Beaches.

We used a Mask-RCNN implemented on TensorFlow. We segmented the video between beach, sea, and people, then train the model on AWS. We won a **hackathon** with it.

### A HAPTIC ROBOT ARM(2017)

ROBOTICS, CONTROL THEORY, MATLAB

We developed a haptic robot arm to help kids with rehabilitation of their entire superior members. We designed and manufactured the robot with SolidWorks. We coded routines like circle movements to help them to improve, then retrieve data to measure how their improvement was. PID control and robotics calculations were implemented on MATLAB and Arduino.

## SKILLS

**Languages:** C/C++, CUDA, Python, VHDL, SQL

**Web Development:**

**Online Curses:** Python

**Hardware:** Arduino, Raspberry Pi & Pico W, FPGA

**Databases:** SQL Server, TinyDB

**Technology:** Git,  $\text{\LaTeX}$

**Frameworks:** Truffle

**Other:** PC Hardware, Laser Cutting