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EDUCATION

MSc. Computer Science — Zapopan, Jalisco | Sep 2019 - Sep 2021
Centro de Investigación y Estudios Avanzados del Instituto Politécnico Nacional
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: Databases, OOP, Microcontrollers, Image & Signal Processing, Analog & Logic Desing, Metrology.

WORK EXPERIENCE

HAVVOX IT AND DIGITAL INNOVATION | D365 Software Dev Jr
Mazatlán, Sinaloa | March 2022 - March 2023

- I worked in technical consultory team on the development to deploy of a new product for the company Calidra, it is a Dynamics 365 Finance & Operations project that will help to manage their clients and their projects sales.
- I pulled off many task involving classes, tables, forms, many other objects and its extensions and I also worked on the development of the frontend and documentation.
- Most of the task achieved required X++ on D365 Visual Studio Extension, in addition of cross-check validation and land Queries on SQL Server Managment Studio.
- As Microsoft partners we used Azure DevOps to manage the project, among other tools like Microsoft Teams for remote working, and we also used the agile methodology to manage the project.

CONSEIL EUROPÉEN POUR LA RECHERCHE NUCLÉAIRE | Research Assistant
Meyrin, Switzerland | Nov 2018 - Dec 2018

- Pure-teamwork between programmers, electronic engineers and physicists. to develop an enhancement for AD and V0 ALICE's detectors, the goal was to detect more particles.
- High-end oscilloscope measures were done to proof UAS proposed sensor could be used. We also developed a full report on the results and the project which was in count for the next cycles of upgrades of ALICE.

UNIVERSIDAD AUTÓNOMA DE SINALOA | Research Assistant
Culiacán, Sinaloa | Sep 2018 - Oct 2018

- An electronic SMD board with a 10-bits 1Gsps LVDS ADC was repaired with help of oscilloscope and review of the schematic and PCB desing.
- We developed the LVDS and HSMC protocol on FPGA to read data from the repaired board in order to make it work as planned. All of this on VHDL.
- This project was done in collaboration with the Physics Department of the UAS. It was prework for the next project which was to include the measurement module in ALICE at CERN.

CINVESTAV DEL INSTITUTO POLITECNICO NACIONAL | Research Assistant
Zapopan, Jalisco | Nov 2017 - Dec 2017

- Robotic related calculations and desing were made to achieve the goal, we did a full review on math involved as we worked on Control Theory area.
- We developed the control for a haptic robot arm to help kids with rehabilitation of their entire superior members using MatLab.

MAJOR PROJECTS

ELECTRONIC HEALTH RECORD SYSTEM(2020) — Blockchain, Solidity, IPFS

- Teamwork activities to develop a database about EHR, ensuring the fidelity and secrecy of patient data. My main task was to develope a requirement about an access control on who can CRUD patient and medical workers data.
- The Etherum Smart Contracts needed were developed with Truffle framework, once ready deployment was done on Kovan Etherum testnet and IPFS.

FACIAL GESTURE-DRIVEN WHEEL CHAIR(2018)

OpenCV, CNN, Python, Arduino

- 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 plus data augmentation. We used and trained a PyTorch image classifier, ResNet18, then we developed the electronics needed.

SEAHAWK: SECURITY FOR MAZATLAN'S BEACHES(2018)

OpenCV, CNN, AWS, Python

- It was a computer vision system able to recognize if people were too off the coast. Main idea was to help lifeguards in Mazatlan Beaches so we used a Mask-RCNN implemented on TensorFlow.
- We used a Raspberry Pi 3B+ with a camera module to capture images, then we used OpenCV to post-process images in the sake of make them fittable for CNN model.
- We segmented the video between beach, sea, and people, then train the model on AWS instance. We won a hackathon with it.

A HAPTIC ROBOT ARM(2017)

Robotics, Control Theory, MatLab, Arduino

- We developed a planar haptic robot arm to help kids with rehabilitation of their entire superior members. The robot was designed and manufactered with help of 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++, Python, SQL
Web Development: Django
Online Curses: Python
Hardware: Arduino, Raspberry Pi & Pico W

Databases: SQL Server, TinyDB
Technology: Git, LaTeX
Frameworks: Truffle
Other: PC Hardwre, Laser Cutting, Azure DevOps