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EDUCATION

Monterrey Institute of Technology and Higher Education, Campus Monterrey, Mexico
Bachelor's Degree in Mechatronic Engineering (9th. Semester).

Expected Graduation: December 2022
Cumulative GPA: 98/100

WORK EXPERIENCE

Harvard Medical School, Research Intern (Boston, MA, USA)

Python

August 2021 – Present

Trained a novel deep learning architecture to segment regions of a fetal brain given by Magnetic Resonance Imaging. This automatic segmentation saves up to 20 hours of human job. Develop in Linux System.

Robotics Institute Summer Scholar (RISS) at Carnegie Mellon University (Pittsburgh, PA, USA)

Python

May – August 2021

Interactive Algebra Interface. Develop a platform where students can learn algebra while interacting with mathematical functions using a glove. The processing is done using OpenCV for filtering and image processing and PyGame for rendering. To be published in the RISS 2021 Journal.

DeAcero, Research and Development Intern (Monterrey, NL, Mexico)

Python / R

February – July 2021

Develop solutions to have a better performance in a couple of processes. I developed data acquisition and analysis in real-time using a Raspberry Pi connected to a PLC of a galvanized wire production line. I proposed a Six Sigma analysis in R and data processing using some python libraries such as Pandas.

On Campus Job, Research Intern (Monterrey, NL, Mexico)

Python

August 2020 – July 2021

We developed an autonomous robot to help secure safe social distance between people on campus focused on the current COVID pandemic. I developed the computer vision algorithm based on multiple Deep Neural Networks using TensorFlow as a framework; and YoloV4 and Res10 as architectures.

National Instruments, Engineering Intern (Monterrey, NL, Mexico)

C / MATLAB / Simulink

February – June 2020

Automotive embedded project to develop the GG-AWES technology based on wind energy generated with an autonomous drone connected to a motor on the ground. I mainly worked on Simulink-MATLAB simulations of the drone flight, developing a 3-DOF nonlinear analysis, testing it with multiple possible scenarios, and C code deployment in a MATEK F765 flight computer.

Qualtia Alimentos, Digital Transformation Intern (Monterrey, NL, Mexico)

C++

January – February 2020

Quality control of meat pieces before and after a process. To track the efficiency and well performance of the process I designed a volume measurement algorithm using a 3D camera. We develop a useful prototype for future in-plant implementation.

Mitacs Globalink Research Intern at McMaster University (Hamilton, ON, Canada)

C++

May – August 2019

Collaborative Robot Arm Software Development. Point cloud processing using Point Cloud Library (PCL) and OpenCV to segment a hand for gesture recognition for human-robot interaction. Trained a Machine Learning model with features from the hand (volume, area, convexity, circularity). Accuracy: 90%

PROJECTS AND COMPETITIONS

Robocup @Home League

C++ / Python

October 2019 – Present

Research team of 17 undergraduate students developing a service and assistive robot technology for personal domestic applications. I am designing the vision algorithm for objects segmentation and pose detection using ROS and PCL with RGB-D camera information, and a collision avoidance method using complementing with a 3D LIDAR sensor.

LARC IEEE Open – International competition (Rio Grande, Brazil)

Python

February – November 2019

An autonomous robot that simulates cargo operations. I worked as captain, I did the vision algorithm for the detection of blocks by their colors and designed the mechanism to handle and position the blocks in their corresponding places.

Robocup 2018 Competition (Montreal, ON, Canada)

C++ / Arduino

January - June 2018

International robotics contest that consists of an autonomous couple of robots added a PID controller (control loop feedback mechanism) to improve movements, that play soccer against another pair of robots. I was doing the mechanical design and analysis of the parts to ensure the robot stability against strikes from opponents.

STUDENT LEADERSHIP AND ACCOMPLISHMENTS

President of Sustaingineering Tec (Monterrey, NL, Mexico)

November 2018 – November 2019

Student engineering team with 15 members that designs, develops, and deploys sustainable technology solutions for renewable energy applications in remote and developing communities. We are currently designing an intelligent charge controller MPPT for higher energy efficiency.

Active member of RoBorregos at ITESM, Campus Monterrey.

November 2017 – Present

School team with active participation in Robotics national and international competitions. Contributing to our community by improving technological development. I have participated in different robotics competitions inside and outside Mexico.

Awarded with Gallagher Scholarship

May 2017

This scholarship gives the opportunity to 5 students all over Mexico, each year, to access a full tuition scholarship at ITESM, Campus Monterrey.

SOFTWARE SKILLS

2 years: C++, SolidWorks (in CSWA certification process)
1 year: Python, Arduino IDLE, NX11, LabView (Core 1-2),
6 months: C#, Matlab, PCL, OpenCV

LANGUAGES

Spanish native speaker.
English: TOEFL IBT Score 94.
German: A2 course.

COURSES

Deep Learning specialization by deeplearning.ai
Applied Data Science with Python by U. of Michigan