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Top Skills

Computer Vision
Network Design
Automation

Certifications

Unsupervised Machine Learning
Supervised Machine Learning: Classification
Python - Verified by Talently
Supervised Machine Learning: Regression

Honors-Awards

First place nationally in the AutoModelCar category of the 2021 Mexican Robotics Tournament
Third place nationally in the Line Follower category, Pursuit mode, at Talent Land 2019 edition

Publications

Lane Line Detection Computer Vision System Applied to a Scale Autonomos Car: AutoModelCar

Jose Angel Balbuena Palma

Mechatronics Engineer | Robotics & Education Enthusiast | IoT | AI | Makerspace | PLC Automation |
Atlixco, Puebla, Mexico

Summary

Highly motivated and results-oriented Mechatronics Engineer with a passion for robotics and a proven track record in:
Integration of automation, network, and security equipment.
Developing navigation algorithms for autonomous driving.
Robotics and mechatronics education.
Administering, operating, and instructing training workshops on robotic platforms, electronics equipment, and various manufacturing tools (PCB prototyping machines, 3D printers, laser cutters, and CNC routers).

Key Achievements:

Awarded academic excellence recognition (2020).
National first place in the Automodelcar (Scale Autonomous Cars) category at the Mexican Robotics Tournament 2021.
Authored a scientific article and a graduation thesis on navigation algorithms for autonomous driving.
Trained hundreds of teachers and students in Mechatronics labs.
Developed an IoT system for self-service loan of manufacturing equipment and worktables, utilizing RFID technology. This system is used daily by dozens of students and professors at the mechatronics laboratory of Tec de Monterrey. The implementation has greatly simplified the equipment borrowing process, enhancing efficiency and overall user experience.
Looking to leverage my skills and experience to contribute to the advancement of technology and education in a collaborative and innovative environment.

Experience

Tecnológico de Monterrey
Mechatronics laboratory specialist
July 2022 - September 2025 (3 years 3 months)
Puebla, Puebla, Mexico

Mechatronics Laboratories Manager at Tecnológico de Monterrey, Puebla Campus, specializing in the instruction and operation of various robotic platforms, automation equipment, electronics, and rapid manufacturing technologies.

Experience:

Instructor and Programmer of Robotic Platforms | ROS | Linux | Python | C++
Instructor and Makerspace Operator | Laser Cutter | CNC Router | 3D Printing | PCB Prototyping Machines
Instructor and Operator of Automation Equipment | Siemens PLC | Fischertechnik
Instructor for the use of electronic laboratory equipment.
Execution of operational and administrative processes in the laboratory |
Automation of processes with App Scripts | Generating reports using Google Data Studio.

Achievements:

I developed an IoT system for self-service loan of manufacturing equipment and worktables, utilizing RFID technology. This system is used daily by dozens of students and professors at the mechatronics laboratory of Tec de Monterrey. The implementation has greatly simplified the equipment borrowing process, enhancing efficiency and overall user experience.
Provided attention and training to hundreds of students and professors, contributing to the development of technical skills within the educational community.
I am committed to continuing to contribute to the advancement of technology and education in a dynamic and collaborative environment.

CETIS 104

Mechatronics professor

February 2022 - July 2022 (6 months)

Puebla, Puebla, Mexico

I worked as a teacher specializing in mechatronics at a technological high school, teaching subjects related to maintenance and integration of mechatronic systems, installation and operation of actuators and sensors:

- Maintenance of mechatronic systems
- Integration of mechatronic systems | Fluidsim | Arduino | PLC | Electrical Control

LICEO BRITANICO DE MEXICO, A.C.

Robotics instructor

September 2021 - July 2022 (11 months)

Puebla, Puebla, Mexico

I worked as a teacher of the robotics subject, conducting workshops on electronics, programming, and educational robotics:

- Instructor of workshops on programming | Arduino | App Inventor | Python
- Instructor of workshops on electronics | Tinkercad | Basic Electronic Circuits
- Instructor of 3D and 2D design workshops | Tinkercad

INAOE

Robotics systems intern

January 2019 - August 2019 (8 months)

San Andrés Cholula, Puebla, Mexico

Development and programming of a system for sound source detection that enables a service robot named Markovito to orient itself in a human-person interaction through an array of microphones, allowing it to turn towards the person speaking to it:

Integration of embedded systems and complex robotic systems | ROS | Python | C++ | Arduino

AE Tech

Integration Technician

April 2018 - December 2018 (9 months)

Atlixco, Puebla, Mexico

I worked as a technician, performing installation, operation, and maintenance of CCTV equipment, security systems, structured cabling, telecommunications equipment, and automation systems.

Education

Instituto Tecnológico Superior de Atlixco

Licenciatura, Ingeniería · (August 2014 - September 2020)