HUGO S. JUÁREZ

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EDUCATION

Tecnológico de Monterrey, Campus Ciudad de México   **July 2023**
Bachelor of Science in Mechatronics Engineering, Specialization in Cyber-Physical Systems
Honorable Mention of Excellence
Final Score: **92/100** (Equal to **3.7 GPA** in the U.S. system)

EXPERIENCE

Procter & Gamble – Cape Girardeau, MO   *Nov 2023 – Present*
Regional Automation Process Engineer

- Developed **Python & SQL-based analytics tools** to monitor and troubleshoot **AGV fleet operations**.
- Designed a **Windows application (Flutter)** for real-time data visualization and automation.
- Resolved **network/server communication issues**, enhancing AGV command center performance.
- **Troubleshot PLC-based automation systems**, integrating sensors and actuators for seamless AGV coordination.
- Implemented **Kepware OPC solutions**, optimizing data flow across industrial systems.
- **Received P&G's Ruby Award** for innovation in **digital automation and AGV deployment**.

All following experiences were completed in collaboration with college projects.

Centro de Inteligencia Voluntario CIV   *Feb – Apr 2023*
Embedded Systems Programmer

- Developed firmware for an **autonomous drone in C++** using **ESP-32 micro-controller**.
- Implemented **PID algorithms and I2C sensor fusion** (IMU, barometer) for stable flight.
- Designed a **custom PCB**, integrating sensors for real-time drone control.
- Integrated **computer vision techniques in Python** for object detection.
- Developed **real-time flight stabilization firmware** C++.

Siemens   *Aug – Dec 2022*
Software & Cloud Programmer

- Built a **cyber-physical system** integrating **RFID tracking and AWS cloud storage**.
- Developed **C++-based computer vision algorithms** for object detection and classification.
- Created a **real-time data pipeline** for **remote microcontroller device monitoring**.
- Optimized **embedded-to-cloud communication** using **MQTT and AWS IoT (Python/Node.js)**.

MotorHub   *Aug – Dec 2021*
Embedded Systems Programmer

- Developed firmware for **two PIC based AGVs**, simulating industrial automation tasks.
- Programmed **Bluetooth-based UART AGV communication** for collision avoidance.
- Designed and tested **PCB layouts** for motor control and sensor integration.

SKILLS

- **Programming Languages:** C, C++, Python, SQL, JavaScript, Dart
- **Microcontrollers:** Bare-metal, STM32, ESP32, ARM Cortex-M, Raspberry Pi, Arduino
- **Robotics & Control:** PID Control, Sensor Fusion, ROS
- **Industrial Systems:** RSLogix 5000, Siemens PLCs, Kepware OPC
- **Communication Protocols:** UART, SPI, I2C, CAN, Modbus, MQTT
- **Debugging & Hardware:** JTAG, SWD, GNU Optimization
- **Version Control & CI/CD:** Git, Docker

LANGUAGES

- English
- Spanish