José Javier Leyva Lizárraga
Embedded Systems Engineer

Electronic & control systems Engineer seeks position in a team responsible for developing embedded hardware and software solutions.

- Programs in **bare-metal embedded C, RTOS** and **Embedded Linux**.
- Event driven programming, active objects & HSM.
- UML 2.5.1, Hierarchical **State Machines**.
- Develops **RTOS** applications in **freeRTOS** & automotive operating systems OSEK/VDX **AUTOSAR OS.**
- Develops **device drivers** & bootloaders.
- Study & peruse **reference designs**, app notes, **datasheets**.
- Character **Linux Device Driver**, platform drivers & platform device drivers. **GPIO Linux subsystem**. **Device tree**.
- Develops firmware for MCU **USB** class HID devices.

- Develops **firmware**, hardware & software.
- Multitasking embedded concurrent programming.
- **Client/Server programming** TCP/IP, MQTT.
- Performs **cross-compile** builds, **debugging**, testing. Schematic & **PCB Layout design**, **prototyping**, soldering.
- PLC siemens s7-, allen Bradley ladder & structured text programming.
- Designing embedded HMI GUI interfaces running in ARM cortex-m microcontrollers.
- Embedded Linux applications.
- **U-Boot** uEnv.txt script.
- **MCAL AUTOSAR** Basic firmware development.

EXPERIENCE

MAPARTEL
electronic embedded engineer   *September/2019 – December/2020*

- ✓ **Developing PCB boards** using Eagle & Altium.
- ✓ testing the designed board.
- ✓ **Firmware Programming in embedded C for ARM cortex-M** microcontroller & AVR.
- ✓ Bare metal **& RTOS** software programming.
- ✓ Developing device driver from scratch perusing technical reference application & reference designs.
- ✓ Rework PCBs & electronic component replacement.
- ✓ System Control Version Git

IMCA
Service Engineer   *August/2018- August /2019*

- ✓ **Fixing electronics boards & electronic component replacements.**
- ✓ Setup parameters in UPS equipment's**.**
- ✓ Generates electrical diagram using *AutoCAD.*
- ✓ **installation UPS in site**.
- ✓ Carry out programs related with **predictable & corrective maintenance** for UPS.
- ✓ *registers customer's paper logs.*
- ✓ **deals directly with customers and stakeholders.**

EDUCATION

UNIVERSIDAD AUTONOMA METROPOLITANA
Electronic Engineering   *2015 – 2023*

INSTITUTO POLITECNICO NACIONAL
Control & Automation Engineering   *2015 – expected graduation: 2024*

INSTITUTO POLITECNICO NACIONAL
Telecommunication Technician   *2012-2015*

Personal Data

Age : 26 years old
marital status: single

Address

CDMX, **Mexico**

Phone

55-36-36-62-42

E-mail

Javier.leyva.lizarraga@gmail.com

Languages

English, B2.
Spanish.

Disciplinary Skills

Critical thinker, Problem solving skills.

Strong self-learning, taught person, e-learning

Creative, Passion for Excellence, Attention to Detail.

Highly steadfast person.

Agile methodology & Kanban.

SKILLS

Embedded Development

C/C++ Embedded Firmware, **device drivers**, **bootloaders**, **DMA**, interrupts (**ISR**), timers, **I2C, SPI, UART**, PWM, ADC, **CAN** ,DAC, **I2S (sound), RTC, memory controllers for SDRAM, EEPROM, QSPI, Display MIPI interface** 8080/6800, DBI-A,B,C, DPI, LVDS **USB firmware, RTOS, U-Boot, Embedded Linux, multithreading IPC** (queues, signals, threads mutexes), **TCP/ UDP networking programming**, embedded GUI/HMI. FAT system file in MCU SD cards. Digital Signal Processing such as filter design and digital control techniques.

Hardware Development

Altium & Eagle for schematic capture and **PCB design** of MCU-based single board computers (**SBC**) and peripherals using **ARM Cortex-M**, ARMv7, AVR, PIC, 8051, SDRAM, QSPI serial flash, EEPROM, parallel/serial graphical Display DBI & DPI, I/O Drivers, **IOT wireless modules** (WI-FI, Bluetooth, RF, GSM, GPS). **Generates Gerber and BOM** for fabrication and assembly. JTAG & SWD debugger J-link. **Analoge & digital Electronic Design. Power Electronics circuit and devices.**

Works with **JTAG**, JLINK, **logic analyzers**, spectrum analyzers, oscilloscopes, soldering tools, prototype assembly & PCB

Software Development

GNU Cross-Compiler Toolchains (make, binutils, GDB, openOCD) linker scripts, **Eclipse** CDT, **GNU/LINUX OS**, Windows, MS office, **Git**/GitHub. **Linux Device Driver, Platform device & Platform device drivers, Device tree** . Matlab/Simulink to generate embedded C

Application Development

Sockets TCP/IP UDP, HTTP, MQTT, REST API JSON POST & GET request, python programs, Labview.

KNOWLEDGE

- Proyects with *Iot*
- Protocols *MQTT, Modbus, HART, profibus DP*
- Standards & communication protocols:
  (USART, I2C, I2S, SPI, DPI, DBI A-B-C,Memory Controllers, SDRAM, QSPI, CAN, RS485, RS232).

- *Real time Operating Systems* **RTOS (trace & profiling)**
  CMSIS-RTOS
  FREERTOS
  OSEK/VDX AUTOSAR OS

- **Microcontroller CMSIS standard.**
- *AUTOSAR*
  MCAL MCU basic software drivers
  Foundations of AutoSAR software component & RTE.
- **Develops system based on ESP under Micropython OS.**
- *Digital Signal Processing* (DSP)
  CMSIS-DSP:
  FFT, Filters design & implementation, discrete control systems strategy, fixed points numbers Q1.31 Q1.15, IIR,FIR and optimal filters.

- *Control theory*
  *Space state, transfer function, LGR, Nyquist, bode plot, Lead & lag compensators in continuos and discrete for control systems analysis (**LQR, observers**, state feedback **K vector**)*

- **communication's module**:
  - *Internet*
  - *RadioFrequency*
  - *cellular*
  - *Bluetooth BLE*
- Designing PCB in EAGLE & *ALTIUM DESIGN.*
- *Develops GUI graphical user interface running on ARM cortex microcontroller:*
  - **emWIN**
  - **TOUCHGFX**
- *Analogue & Digital Electronic Circuit Design.*
- *Developing system **using State machine UML**. Using event driven programming.*
- *System viewer tracelyzer on RTOS /segger systemview.*
- *J-link*
- *USB HID development from the scratch*
- *Develop GUIs for desktop environment using python*
- *P&ID Pipe & Instrument diagram using ISA 5.1-2009*
- *DC & AC monophase and triphase motors.*
  Motor connections, Motor Electric control.

MICROCONTROLLERS & SOCS

Architectures: *32,16 & 8 bits*

- *MSP430* TI
- **ARM** cortex-M3/M4/M7
- *ATMEL AVR mega*
- *8051*
- *PIC* MICROCHIP

- *ESP8266 / ESP32*
- *TI TM4C123*
- *STM32*
- *nRF52 BLE*
- *omap335x ARM-A*

PROGRAMMING LANGUAGES

- **Embedded C**
- C++
- Python

SOFTWARE

- AutoCAD
- Matlab/simulink
- Labview
- Wireshark
- git

- Altium Designer
- Eagle
- LTspice/proteus

FRAMEWORKS & IDES

- Keil ARM uVision
- Code Composer Studio CCS
- AtmelStudio ASF -> MicrochipStudio
- MPLABX
- VI editor & Makefile
- Stm32 cubeIDE
- ARM & AVR GNU toolchain.
- **Eclipse IDE** ARM MCU plugins.
- State-machines (QP) framework C/C++
- Embedded C/C++ bare metal incremented compilation process **without use any IDE**