

NICTHE JIMENEZ

EMBEDDED SOFTWARE ENGINEER

CITIZENSHIP

United States Citizen

WEBSITES, PORTFOLIOS, PROFILES

- www.linkedin.com/in/nicthe-jimenez
- <https://sites.google.com/view/portfolionataly/>
- github.com/NictheJimenez?tab=repositories

SKILLS

- HAL
- FreeRTOS
- ARM cortex-M
- Communication Protocols
- C/C++ (Programming Language)
- Debuggers
- Assembly Language
- Microcontrollers
- Digital Signal Processors (DSP)
- MATLAB
- Hardware Engineering
- Problem Solving
- STM32CubeIDE
- Kicad
- STM32CubeMx
- MSP430f
- MatLab
- Hspice
- B-L475E-IOT01A1
- STM32H7B3I-DK
- Logic Analyzer
- Multimeter
- Oscilloscopes
- Signal Generators
- Power Supply
- Beaglebone Black A5 (TI)
- TouchGFX
- Linux
- FreeRTOS
- Debugging embedded systems
- ARM Cortex Mx (M4/M7)
- Serial protocols SPI, I2C and UART
- RTOS development
- Embedded Systems Programming
- Assembly language
- Device Driver Development
- Debugging tools
- DAC
- ADC
- LCD
- TouchGFX
- RTC
- Sensors
- Minicom
- Booting
- Embedded Linux (Linux Device Driver) with Debian OS

- PuTTY

- OverlayFS, Device tree nodes, Makefile, Kconfig
- Bluetooth Low Energy (BLE)
- LightBlue

PROFESSIONAL SUMMARY

Detail-oriented Embedded Software Engineer, with 4+ years of industrial work experience in Embedded Software Engineer, Committed to improving Embedded Real Time System Design and improving operations for Firmware design, implement debugging skill for troubleshooting with microcontrollers as arm cortex Mx architecture, msp430, Beaglebone Black.

WORK HISTORY

FIRMWARE ENGINEER 03/2023 to 12/2023

Trividia Health, 2200 NW 62nd St, Fort Lauderdale, FL 33309

Trividia Certificates:

<https://sites.google.com/view/portfolionataly/training-certificates#h.wv1tuxwvkgey>

- Firmware design with C code & CCStudio IDE for embedded processors for 8-bit and 16-bit with TI microcontrollers (MSP430f5xxx) with analog ADC and DAC interfaces
- Developed of electronics and firmware interfaces
- Experience with in-circuit-emulators
- Experienced with equipment such as oscilloscopes, protocol analyzers, logic probes, volt meters, etc
- Experience with UART, I2C, SPI and Bluetooth protocols
- Write and execute Verification and Validation documents required by FDA
- Familiar with software life-cycle management and source control
- Experience with microcontroller based firmware development
- Experience with JTAG interfaces.
- Optimized firmware performance through rigorous testing and debugging procedures.
- Developed embedded software for product enhancements, resulting in increased customer satisfaction.

EMBEDDED SOFTWARE ENGINEER 03/2020 to 03/2021

Baker Hughes, Mexico

- Develop Middleware components for ARM based embedded Linux
- Ported BPS (Board Support Packages) for custom boards
- Ported Linux kernel and U-boot on custom boards
- Designed and developed applications based on Microcontrollers from ARM cortex-4 and ARM cortex-7 from ST
- Usage of memory devices such as ROM, Flash, SRAM
- Coding and verification of application firmware for electromechanical system based on STM32 L4/H7

- Experience writing low-level drivers and testing/application firmware for embedded systems
- Experience with serial SPI, I2C, UART communication protocols and interfaces
- Managing several tasks with FreeRTOS for embedded applications.

DSP SOFTWARE ENGINEER 08/2016 to 12/2019

Harman, Mexico

- Implemented algorithms such as Acoustic Echo Cancellation, Double Talk Detection, Noise Reduction
- Ported DSP algorithms, optimized and tuned them for required application
- Converted research papers into prototype code, modeled them in MATLAB
- Development of MATLAB simulation models and designing robust voice processing algorithms.

EDUCATION

UC San Diego Extension, San Diego, CA

Embedded Systems Engineering, Embedded Controller Programming With Embedded C, 11/2020

Embedded coffee maker as a project with STM32CubeIDE to write, debug, run the code, used GPIO inputs, GPIO outputs, console output and analog inputs with STM32L4 Discovery kit. Building embedded coffee maker controller programming with embedded C with the LL (Low-Layer), HAL (Hardware Abstraction Layer), BSP (Board Support Package) interfaces. Programming UARTs, GPIO (General Purpose Input/Output), due to a Microcontroller has a set of GPIOs, and each I configured with different ways: input, output, with or without pull up or pull downs, interrupt inputs, and more. Programming the ADC, that is, analog-to-digital conversion for embedded controllers to read ADC values from various sensors with I2C, SPI interfaces.

Project 1: Embedded Coffee Maker (C, STM32CubeIDE, PuTTY)

<https://github.com/Nicthelijimenez/Embedded-Coffee-Maker>

PDF

https://drive.google.com/file/d/1fP1WfmGTBZ-v5KNIAL4ALvT_WPis8hUE/view?usp=sharing

UC San Diego Extension, San Diego, CA

Embedded Systems Engineering, Embedded Systems Hardware Design, 09/2020

Project about how to construct a block diagram of the required Embedded System. Used KiCad tools, select sensors, actuators, and a microcontroller, design proper interfaces between modules of the Embedded System, finally build and test an Embedded System used Discovery kit for IoT node, multichannel communication with STM32L4 and external memory FRAM module. Define what pins of the microcontroller are used for communication with sensors (and what buses they represent), what pins are used for indicators (LED), what pins are used as digital inputs, and so on, to properly configure the microcontroller.

Embedded Systems Hardware Design (KiCad)

<https://github.com/Nicthelijimenez/NictheJimenezESHD>

PDF :

https://drive.google.com/file/d/1glyGZVIMXU4GOjQ8x5Tu6xvX_1gOLOUt/view?usp=sharing

INAOE, Mexico

Master's Degree in Electronics, 08/2016

Development and implementation of new DSP (Digital Signal Processing) algorithms for modern communications, DSP techniques and design with FPGA (VHDL & Matlab). Development board FPGA Xilinx. Software/Tools: Xilinx Vivado, Xilinx SDK. Acquired competencies: Theory and implementation on integrated circuit design and DSP. Setup of a compiling environment for FPGA.

Polytechnic University of Puebla, Puebla, Mexico

Bachelor's Degree in Engineer of Electronics and Telecommunications, 12/2013

Acquired competencies: Design of multiple stages analog amplifier. Microcontroller firmware development. Design of a user interface on Matlab for controlling and monitoring the sensor. Design of the PCB layout. Soldering of the components on PCB. Digital signal processing.

TRAINING

- Design of Digital Integrated Circuits
- Electronics
- Electromagnetic Theory
- Software Defined Radius
- Digital communication
- Digital Signal Processing
- Digital Signal Processing with FPGA
- Introduction to Embedded Systems
- Mastering RTOS: Hands on FreeRTOS

PROJECTS

- **LCD-Board-Beaglebone-black (github)**

Interface from 16x2 LCD to Beaglebone black hardware • Tested the LCD application. LCD contrast control using potentiometer and sending commands to LCD.

<https://github.com/Nicthejimenez/LCD-with-Beaglebone-black-hardware.git>

- **Linux-device-driver (VIDEOS & github)**

Char linux device driver with multiple devices with Beaglebone Black, device tree overlays and pin control subsystem of linux.

<https://github.com/Nicthejimenez/Char-driver-with-multiple-devices.git>

- **TouchGFX-Board-STM32H7B3I-DK (VIDEO & github)**

Create multiple screens in an application and share data between the screens, that simulates a clock, scroll wheel and Integrating TouchGFX keyboard.

<https://github.com/Nicthejimenez/TouchGFX-Board-STM32H7B3I-DK.git>

- **SPI master in transmit only programming from scratch using logic analyzer (VIDEOS)**

<https://sites.google.com/view/portfolionataly/>

- I2C protocol programming from scratch with RTC and LCD interfacing

<https://sites.google.com/view/portfolionataly/>

- More projects

<https://sites.google.com/view/portfolionataly/>

ADDITIONAL INFORMATION

PUBLICATIONS

"Blind Sparse Channel Identification Using Subspace-based Algorithm"

Honoree of [ieeexplore.ieee.org 2016, DOI: 10.1109/MWSCAS.2016.7870054 Published in: 2016 IEEE 59th International Midwest Symposium on Circuits and Systems (MWSCAS)]

- Nicthe Nataly Jimenez; Alfonso Fernandez-Vazquez; Gordana Jovanovic Dolecek

<https://ieeexplore.ieee.org/document/7870054>

The paper addresses the problem of blind channel identification under sparse channel conditions. Our approach is an extension of the subspace blind channel identification methods. The identification of sparse channels and uses the L1 norm. By doing so, we show that the performance of the proposed method outperforms the previous approach.

- Awarded [**Conference: 2016 IEEE 59th International Midwest Symposium on Circuits and Systems (MWSCAS) United Arab Emirates, October 2016**

Paper ·DOI: 10.1109/MWSCAS.2016.7870054.

Blind sparse channel identification using subspace-based algorithms]

LANGUAGES

Spanish

Native

English

Professional