Vladimir Sirghi

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Experience

STMicroelectronics — Le Bourget-du-lac, Auvergne-Rhône-Alpes, France

Embedded software engineer — *March 2022 – Present*

- Developing firmwares for ARM Cortex-M targets and FPGAs SOC prototypes.
- Operating in agile environment: addressing stories, tasks, tickets, sprints, issuing pull requests.
- Providing support and guidance to external consultants throughout project execution.
- Collaborating with digital design, architecture, algorithm and test teams.
- Documenting firmware design specification and requirements.
- Coding in C in automotive safety-oriented projects.
- Writing cmake scripts for C/C++ project system build.
- Using gcc and gdb for compilation and debugging.
- Using and updating *LL*[1] and *HAL*[2] libraries from ST for peripheral drivers.
- Bare metal coding.
- Debugging and optimizing software in a cross-team environment.
- Using git for versioning in a multiple nested repositories project environment.
- Addressing and reviewing pull-requests on github.
- Developping in Windows, Linux, WSL, windows to linux in ssh environments.
- Writing python and bash scripts to automate tasks and improve efficiency.
- Writing unit tests (cmocka framework)
- Writing integration tests (gauge framework and Python scripting).
- Using Jenkins automated tasks and tools, collaborating with the dev-ops for new automation.
- Implementing a software module to extract debug reports, parameters, phy indicators and channel impulse responses.
- Employing *ROS*[3] to effectively interpret the collected data.
- Developing firmware for power consumption profiling.
- Maintaining *HTOL*[4] firmware for QA purposes.
- Achievements:
  - Leading on verification activities resulted in a successful, on-time "Go" status for silicon pattern generation.
  - The developed software debug module reduced debug time and increased overall troubleshooting capabilities.
  - Debug reports, along with channel impulse response data, are available in PlotJuggler visualization tool.
  - The pipe: debug module + *ROS* + visualization is highly used in demo purposes along with system analysis.

STMicroelectronics — Le Bourget-du-lac, Auvergne-Rhône-Alpes, France

Verification lead pre-pg — *March 2024 – December 2024*

- Leading actions & responsibilities:
  - Defined & regrouped actions in milestones for better visibility and progress tracking.
  - Organized milestones in sprints, with clear objectives, including demo requirements.
  - Assigned stories & tasks to team members and myself within each sprint.
  - Conducted regular reviews & status meetings to review progress and apply corrections.
  - Presented sprint demos to showcase progress and meet project targets.
- Hands on contributions:
  - Contributed to features implementation, enhanced project functionalities.
  - Implemented tests to ensure features reliability and performance.
  - Code reviews.
  - Bug fixing and troubleshooting.

[1] LL : Low Level
[2] HAL : Hardware Abstraction Layer
[3] ROS : Robot Operating System
[4] HTOL : High-Temperature Operating Life

Atos Grenoble, Auvergne-Rhône-Alpes, France

Test engineer: cmos image sensors *October 2020– February 2022*

- Developed Python testing scripts ensuring that the following safety mechanisms met safety requirements for the automotive industry:
  - mcu watchdog, stack monitoring, lockstep
  - firmware global variables protection,
  - at startup built in self tests bist
  - memory integrity, parity, bist,
  - crc program protection,
  - clock bist,
  - pll unlock detection,
  - asil diagnostic rows and columns,
  - otp memory crc,
  - supply monitoring blocks,
  - periodic voltage monitoring,
  - thermal monitoring,
  - periodic crack detection.
- Documented tests specifications and reported on test results.
- Used git for code versioning, Jenkins for automation and integration
- Worked in agile environment.

STMicroelectronics Grenoble, Auvergne-Rhône-Alpes, France

Test engineer *September 2018 – August 2020*

- Developed Python scripts for unitary, integration, and system tests on hardware and firmware components.
- Documented tests requierements and reported on test results.
- Used git for code versionning.
- Solved and addressed tickets and issues on both hw and fw components.

French Army Laudun - l'Ardoise, Occitanie, France

Electro-mechanical technician and team lead *September 2010 – August 2018*

- Managed military electrical networks, ensuring power supply and operational readiness.
- Performed maintenance and troubleshooting on power plants and generator sets.
- Designed and installed military electrical networks in external operations.
- Led a team of military technicians, providing guidance, training, and support to ensure quality work and team cohesion.

Education

Savoie Mont Blanc University Le Bourget-du-Lac, Auvergne-Rhône-Alpes, France

Masters in "Electronic of Embedded Systems and Telecommunications" *September 2018 – August 2020*

- Telecommunications electronics
- Fast signal electronics and EMC
- Microwave circuits
- Signal processing
- DSP signal processing processors
- C programming for embedded systems
- Radiocoms & Wireless LAN
- FPGAs and reconfigurable processors
- IP networks and Internet of Things
- Programmable systems-on-chips
- High speed transmission
- Error detection and correction
- Computer architecture
- Principles of radiocomunication
- Antennas
- Communication bus systems and networks
- Integrated radio frequency components
- Linux kernels for embedded systems
- Real time on microprocessor target

- Digital circuit technology and design
- Applications of embedded systems in telecoms
- Advanced Integrated Components
- Energy production and management for systems

University of Franche-Comté Bourgogne-Franche-Comté, France

Bachelor in "Computer Science" *September 2020 – August 2021*

- Data base
- Algorithms and Basics of Programming
- English
- Analysis and modeling of information systems
- Formal methods
- Computer architecture
- Systems and Networks
- Language theory
- Program specification and proof
- Web languages
- Advanced programming

Toulouse 3 University "Paul Sabatier" Toulouse, Occitanie, France

Bachelor in "Electronics, Electrical Engineering and Automation." *September 2016 – August 2018*

- Operating systems for control computers.
- Computer process linking.
- ADC/DAC converters.
- C language: pointers and sequential files.
- Interpolation, adjustment, and optimization.
- Laplace, Fourier, Z-transform, and sampling.
- MATLAB language and matrix calculations.
- Propagation of a signal in free and guided space.
- Transfer functions.
- Quadrupoles.
- Resolution of linear and non-linear systems.
- Linear programming.
- Analog diode circuits, static and switching transistors.
- Amplifiers, field-effect transistors, and counter-reaction.
- Insulating materials, magnetic circuits, three-phase distribution networks, and single-phase transformers.
- Synchronous machines: alternators and motors; asynchronous motors.
- DC/DC converters, switching power supplies, and single-phase inverters; speed variation of a direct current machine.
- Temporal and frequency modeling of elementary dynamic systems (mechanical, electro-mechanical, etc.).
- Performance analysis of a controlled system and summary of an analog control strategy.

CNED "Centre National d'Enseignement à Distance" Avignon, Provence-Alpes-Côte d'Azur, France

BTEC HND in "Electrical Engineering and Electronics " *September 2014 – August 2016*

- Mathematics
- Applied Sciences
- Construction
- Electrical Engineering
- English
- General Culture and Expression

"Nicolae Balcescu" Land Forces Academy Sibiu, Romania

Bachelor's Degree in Management of Military Organizations *September 2002 – August 2006*

- Faculty of Military Management has the mission to form, at undergraduate and postgraduate level, officers for arms/military specialties of the Land Forces and also military and civilian specialists for other beneficiaries from the national defence system, public order and national security. The mission is in total accordance with the Institutional Strategy of "Nicolae Balcescu" Land Forces Academy and aims at creating general and specific professional competencies for the arms/military specialties: Artillery, Engineering, Defense CBRN, Transportation, Intendance, Finances and Accounting, Communications and Informatics.

Languages

English: Professional [TOEIC certificate]
French: Native
Romanian: Native

Professional Trainings

- Writing secure firmware
- ISO26262 in Product Development
- Automotive Safety HW ISO26262
- Object Oriented Programming in C++
- General Imaging Concepts & Integration
- Understanding Image Sensor Characterization
- Indirect Time Of Flight
- Image Sensors Architecture
- Algorithms for Image Analysis
- Imaging Signal Processing Algorithms

Skills & Interests

Languages: C, python, bash, MATLAB

Technologies & tools: Ubuntu/Linux, Git, CMake, LaTeX, ROS, OpenOcd, Cortex M, Jenkins, gcc/gdb, jlink/stlink

Protocols: i2c, spi, uart, jtag, swd, can

Continued Education: click&check certificates

- Mastering RTOS: Hands on FreeRTOS and STM32Fx with Debugging
- Bash Mastery: The Complete Guide to Bash Shell Scripting
- Embedded Systems Programming on ARM Cortex-M3 M4 Processor
- Mastering Microcontroller: Timers, PWM, CAN, Low Power (MCU2)
- Embedded Linux Step by Step Using Beaglebone Black
- The Complete Python Bootcamp From Zero to Hero in Python
- Git Complete: The definitive, step-by-step guide to Git
- Mastering Microcontroller and Embedded Driver Development
- STM32Fx Microcontroller Custom Bootloader Development
- Microcontroller Embedded C Programming: Absolute Beginners

Interests: family activities & education, music, cross-training

Projects

Moving Cube Image

- C application running on a stm32fx target reading X, Y, Z values from the joystick's accelerometer
- Based on X, Y, Z values dynamically display the position of the cube on the screen

Convolutional encoding machine & viterbi decoder

- Python application running convolutional encoder on data
- GUI (developed in QT) allowing the user to enter textual message in data field & explicetly corrupt some bits
- transmitting corrupted payload to the stm32fx via uart
- stm32fx running a viterbi decoder and printing the fixed message on a lcd

PID PWM motor control

- C code embedded into stm32fx ram memory running application
- application reading temperature from a temperature sensor
- based on temperature value outputing a PWM signal
- increasing the PWM duty cycle with the temperature increase
- a cooler motor controlled through PWM energy

Maximum Power Point Tracking MPPT Solar Panel Controller

- C application running on PIC16F877A microcontroller
- reading voltage and current from the solar panel
- calculating the maximum power point using the Perturb & Observe algorithm
- adjusting the duty cycle of a DC-DC converter to optimize power output
- implementing a sun tracking system to follow the sun's position for maximum illumination

- charging a battery & powering a water pump