

Zăpuc Marian



Personal information:

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- Date and location of birth: 31-08-1986, Râmnicu Vâlcea City, Vâlcea County, Romania
- Marital status: unmarried
- Driver's Licence: Cat. B (since 2005), Cat. A (since 2011)

Professional goals:

On the short term, my priority is:

- Being a part of significant SW projects where focus is put on innovation / optimization.

On the long term, my objectives' list includes:

- Pursuing a Ph.D. in Computer Science, with a focus on advanced image processing.
- Maintaining and, if possible, augmenting my physical abilities, being convinced that a physical state of well-being is translated in an increased quality of life and better intellectual performance.

Employment history:

- **29.08.2016 – present: Senior Embedded Software Engineer/Integrator, ThyssenKrupp Components Technology Hungary**

I am developing safety critical Automotive SW for Electric Power Assisted Steering (EPAS) ECUs (including steer-by-wire). Among the standards, technologies and tools employed are: UDSonCAN (ISO 14229-3:2012), UDS (ISO14229-1:2013), AUTOSAR (MCAL, OS, RTE), Vector (Flash Bootloader, CANape, CANoe, CANdela, DaVinci Configurator), Lauterbach Trace32 Debugger, NXP MPC574xP MCUs, ST SPC4 MCUs.

During this assignment I developed a bootloader for the EPAS system of Faraday Future's FF91 autonomous vehicle and, later on, I held the role of Software Integrator for about 10 months in the Ford Transit EPAS project. Currently, I am part of the pre-development department working on the next generation steer-by-wire systems.

- **01.02.2016 – 26.08.2016: Technical Team Leader, Harman Automotive (on behalf of Luxoft Professional Romania)**

I led a team of 10 embedded software engineers, developing the IP Connectivity module of the NTG6 (New Telematics Generation) automotive infotainment system that's being supplied by Harman International to Daimler AG. This module ensures communication with other devices by means of Bluetooth PAN, WiFi, CAN etc. Development was being done in C++11 under Linux, we were using various software frameworks (e.g. the Apache Thrift) and the Vector VN1610 network interface for CAN/LIN etc.

- **04.03.2015 – 29.01.2016: Senior Embedded Software Engineer, Wind River Romania**

My tasks implied doing hardware device functional modelling for the *Wind River Simics* full-system simulator (<http://www.windriver.com/products/simics>). While performing my daily

duties I had to understand HW reference manuals and create fully functional models of HW devices. Besides experience working with various embedded devices, functional modelling required good skills of embedded C/C++ and Python (for unit testing).

- **11.11.2013 – 27.02.2015: System Engineer (BMW Navigation), Harman Automotive, Germany**

Initially I was part of the pre-analysis team, assigned to the BMW Navigation project, whose main duty was investigating defect tickets from customers. The daily activities in this position involved analysing MOST (Media Oriented Systems Transport) communication captures, DLT (Autosar Diagnostic Log and Trace) traces, performance indicators, reproducing bugs (on test benches and in the cars) and performing post-mortem debugging.

Following the first five months I worked in the architecture team, developing (from scratch) a suite of tools that can perform static C++ code analysis (on a very large codebase, supporting the C++11 standard) using the LLVM compiler framework and the Clang frontend (<http://clang.llvm.org>).

- **20.11.2012 – 06.11.2013: Embedded Software Developer (Networking-L1), Systems and Technology Group, IBM Romania**

I was working on IBM's Network Operating System (NOS) which runs on its network switching units (both chassis embedded and TOR – top of the rack). My involvement was in new features development, existing codebase maintenance and unit testing.

The development was done in C99 and the software ran on top of Linux (in user space) on a PowerPC architecture.

- **15.03.2011 – 16.11.2012: Software Engineer, Freescale Semiconductor Romania**

I was one of the main developers of the Freescale AUTOSAR OS, focusing on the OS Configurator. The Freescale AUTOSAR OS is a RTOS that features timing protection, memory protection, mixed scheduling (preemptive and non-preemptive tasks in the same application), spinlocks, static scheduling by means of schedule tables etc.

The OS Configurator's inputs are files in standardized formats (OSEK/VDX, AUTOSAR) which it uses to output ISO C89 code (that is compiled with the OS code and applications that run on top of the OS) and linker script files. This project had approximately 48k lines of code and I managed to understand the entire codebase, re-factored and re-designed approximately 80% of it; made several improvements in the running time and ported 6 Freescale platforms on two AUTOSAR versions (3.0.2 and 4.0.3).

While working on this project I had the opportunity to gain in-depth working knowledge of several Qorivva microcontrollers with numerous integrated peripherals. The coding was done in ISO C89, Java, the JAVACC metalanguage and C++98.

- **14.12.2010 – 07.02.2011: Software developer, Enea Services Romania**

As part of the Hospira team working on the Hospira Symbiq Infusion System Simulator (a simulator for a Motorola 68000-based medical device), I was assigned with the development of a virtual peripheral device for the infuser (pump) simulator. The device's role was to run unit tests for the display primitives.

I also created the display primitives unit testing framework on both sides: pump (the framework and unit tests were written in C 89) and simulator (the framework and unit tests were written in C#).

- **23.03.2009 – 13.12.2010: C/C++ programmer, PSS-Prosoft Solutions**

The company was subcontracted by S3-Store System Solutions (later acquired by IBM, subsequently by Toshiba) to develop its Retail Market software suite named VisualStore (<http://www.visualstore.it/>). VisualStore provides complete solutions for supermarkets including software for POSes (Point Of Sale) and backoffice management.

I worked on both the POS and the backoffice sides, dealing with FSMs (finite-state machines), large hash table structures, EFTs, MSRs, barcode scanners, TCP/IP sockets, process and thread level parallelism, asynchronous communication using mailboxes, SQL etc.

- **07.07.2008 – 20.03.2009: Multiplatform C Developer, Axway Romania**

I worked on the Axway Integrator Server (a part of the Synchrony platform – a B2B Middleware Application).

The Axway Integrator is a modular server that enables two (possible unrelated) applications to communicate using various protocols and data formats, offering high transaction processing speed and flexibility in terms of adapting to the ever changing communication protocols and data formats.

Development was done in ISO C99, ISO C++98, *Message Builder* (an internally developed language), *Java*, *XML*. Among the libraries we used was the Apache Xerces Parser library.

Studies:

- **2015-2017: "Politehnica" University of Bucharest, Advanced Computing Architectures, M.Sc.**

My dissertation thesis was focused on depth perception using stereo cameras and it was graded with a 10 out of 10.

- **2005-2009, 2012-2013: "Politehnica" University of Bucharest, Computers and Automatic Control Faculty, Compilers and Operating Systems Specialization, B.Sc.**

For graduation I developed a self parking car using a Freescale Qorivva microcontroller. Due to a malfunction caused by a sensor during the demo it was only graded with a 9 out of 10.

- **2001-2005: "Alexandru Lahovari" National College, mathematics-informatics section, Rîmnicu Vîlcea.**

I graduated highschool with a Baccalaureate diploma after having completed the exams with a GPA of 9.7 out of 10.

Projects:

- Stereo Depth Perception System – an embedded system employing two Raspberry Pi 2 model B SBCs and two 5 MP cameras, in a stereo configuration, that's able to measure the distance to a scene by running the semi-global matching (SGM) stereo correlation algorithm.
- Autonomous Parking Agent – an embedded system featuring a 1:10 model car equipped with ultrasonic sensors, IR sensors and wheel position encoders, running nonholonomic planner algorithms on a Qorivva MPC5606B microcontroller, capable of autonomous parallel and perpendicular parking.
- A compiler for the COOL language (Classroom Object Oriented Language).
- System call interceptor module for the Windows NT and Linux kernels; UART driver for Windows NT and Linux.
- Huffman compression utility; several homeworks where I used the OpenMP and MPI libraries, Win32 API, POSIX API on Linux.

Foreign languages(Writing-Speaking-Reading):

- Romanian (Native – Native – Native)
- English (Advanced – Advanced – Advanced)
- Spanish (Beginner – Medium – Medium)
- German (Medium – Medium – Medium)

Computer skills:

- Experienced in developing the AUTOSAR OS and configuring various BSW modules (CAN, CAN-TP, DCM, NvM, FEE, FLS etc.).
- Experienced in developing bootloaders for the Freescale/NXP Qorivva platforms (MPC5607B and MPC5744P).
- Familiar with the ISO 26262 and UDS 14229:2013 standards.
- Working knowledge of using the Lauterbach JTAG Debugger, digital oscilloscopes, Vector VN1630 CAN network interface etc.
- Solid knowledge of the x86 and PowerPC architectures (with a focus on Freescale's Qorivva family); familiar with the ARM architecture and IBM Cell Broadband Engine Architecture.
- Working knowledge of embedded systems' design and applications (e.g. motor control); familiar with the x86 and PowerPC assembler languages.
- Familiar with the SPI, LIN, CAN, FlexRay and MOST communication networks.
- Proficient in Linux user-space development; familiar with Linux kernel-space development.
- Familiar with the OpenCV and OpenGL libraries.
- Familiar with parallel programming using MPI and OpenMP; working knowledge of parallelization using pthreads.
- Proficient in the C language; working knowledge of C++ and Java; familiar with the C#, Scheme, Prolog and Python languages; familiar with bash scripting.
- Familiar with the theory of formal languages and compiler theory; familiar with the ANTLR and JAVACC metalanguages.
- Familiar with SQL and the theory of RDMSs; familiar with some communication network concepts and protocols (ISO OSI Seven Layer Model, TCP/IP Model, DNS, SMTP, HTTP, DHCP, IMAP, RPC).
- Proficient at using various programming paradigms like Object Oriented Programming, Imperative Programming and Functional Programming.
- Familiar with some Artificial Intelligence algorithms and concepts.
- Working knowledge of using various software tools like SVN, CVS, IBM ClearCase, MS Visual SourceSafe, GIT, DOORS etc.
- Proficient at using automatic build tools like Ant, Make and Perforce Jam.
- Familiar with various compilers like the GNU GCC Compiler Collection, Freescale CodeWarrior, Green Hills Compiler, Microsoft C/C++ Compiler and Linker (cl).
- Proficient at working with complex data structures and algorithms; familiar with algorithm complexity concepts.
- Experienced various software development methodologies (i.e. Agile, Waterfall, V-Model).

About me:

- Strong points: very good communication skills; attention to details; enthusiastic, highly energetic, self-motivated and self-paced; good stress tolerance; analytical approach; I have a need to learn continuously in order to feel happy.
- Weak points: taking on too many projects at the same time.
- Interests: Embedded systems, Operating systems, Human physiology, Nutrition, Fitness, Motorcycles.