

PERSONAL INFORMATION

Marian-Emanuel Ionaşcu



JOB APPLIED FOR
POSITION
PREFERRED JOB
STUDIES APPLIED FOR
PERSONAL STATEMENT

WORK EXPERIENCE

June 2019 – Present

Administrator

Intelligent Mobile Applications SRL Timisoara, str. Alma Comea Ionescu Nr 16 Parter.

Key responsibilities:

- Defining and implementing the company's strategy for short, medium and long term periodsDeveloped and executed comprehensive strategies for the company's short, medium, and long-term goals, ensuring alignment with overall business objectives and market trends.
- Conducted thorough market analysis and competitive research to inform strategic decisions and identify growth opportunities.
- Coordinated daily operations and delegated tasks effectively to maximize team productivity and efficiency.

Business or sector Mobile Applications, Automotive, IoT

February 2017 – Present

University Assisting Teacher

Politehnica University of Timisoara, Timisoara str. Vasile Parvan Nr. 2

Writing and Presenting Laboratory Papers

- Authored detailed laboratory papers designed to facilitate students' understanding of complex embedded systems
- Delivered engaging presentations to introduce and explain laboratory exercises, ensuring clarity and comprehension.
- Provided hands-on guidance to students during laboratory sessions, helping them implement the required tasks and troubleshoot any issues.
- Continuously updated laboratory papers to reflect the latest advancements and best practices in the field, ensuring that the curriculum remained current and relevant.

Writing Project Themes

- Developed innovative project themes that incorporated recent advancements in computer science disciplines, challenging students to apply their knowledge creatively and practically.
- Ensured that project themes were comprehensive, covering a wide range of topics and skills to provide a well-rounded educational experience.
- Integrated real-world applications and current industry trends into project themes, preparing students for the demands of the professional world.
- Provided detailed guidelines and support to help students understand project requirements and expectations.
- Encouraged critical thinking and problem-solving skills through well-structured project assignments, fostering an environment of intellectual growth and discovery.

Digital Logic Design

- Utilized Verilog HDL for the implementation of digital circuits, ensuring efficient and accurate design processes.
- Conducted basic design implementations using Xilinx and Altera FPGAs
- Engaged in simulation and testing of digital designs to verify functionality and performance metrics.

Large Scale Integrated Circuits

- Applied Verilog HDL to design and implement complex circuits, optimizing for both functionality and resource utilization.
- Integrated BRAM (Block Random Access Memory) memories to enhance circuit efficiency and storage capabilities.
- Utilized the Wishbone bus protocol to facilitate communication between different components, ensuring seamless data transfer and system integration.

Digital Microsystems Design

- Employed Intel assembly language for precise and efficient programming of digital microsystems.
- Designed a basic 8086 development board, focusing on fundamental principles and practical applications.
- Conducted hardware and software integration, ensuring seamless operation of the development board.

Embedded Systems

- Utilized the C programming language to develop software for the STM32 microcontroller series, ensuring efficient and reliable code execution.
- Designed and implemented low-level drivers for laboratory usage on STM32 microcontrollers, covering a range of functionalities including ADC, Timers, Serial communication blocks (SPI, I2C, USART), PWM, DAC, GPIO, and Interrupt handlers.
- Conducted rigorous testing and validation of embedded systems to ensure operational efficiency and reliability.
- Developed documentation and guidelines for the usage and implementation of embedded systems in laboratory settings, ensuring best practices and standardization.

Business or sector Education, Research

Aug 2022 – Jul 2024

Embedded Software Developer

External Embedded C Developer working with HUF Romania

Embedded Software Development for Doorhandler Projects

- Designed and implemented embedded software solutions based on detailed requirements for doorhandler systems, including functionalities for motor drivers, capacitive sensors, pull detection algorithms, and diagnostic features.
- Utilized industry best practices to ensure the software met performance, reliability, and safety standards.

Software Quality Assurance

- Conducted comprehensive Polyspace analysis to identify and resolve potential software issues, ensuring code reliability and safety.
- Developed and executed detailed test cases in Tessy for thorough unit testing, verifying the functionality and correctness of software components.

Problem Solving and Maintenance

- Analyzed existing software to identify root causes of issues and proposed effective solutions to enhance system performance and reliability.
- Implemented fixes and improvements based on system design and requirements, ensuring seamless integration with existing modules.

Architecture and Software Design

- Created detailed architecture and software design documents using IBM Rhapsody, ensuring clarity and coherence for new module development.
- Defined software architecture that aligned with project goals and facilitated efficient development and maintenance processes.

Customer and Internal Releases

- Assisted the team in preparing for both customer and internal software releases.
- Provided support during release cycles, addressing any last-minute issues and ensuring a successful deployment.

Working with the SAFE Framework

- Applied the Scaled Agile Framework (SAFE) principles to streamline development processes and enhance team collaboration.
- Participated in agile meetings, including sprint planning, daily stand-ups, and retrospectives, to ensure continuous improvement.
- Contributed to the adoption and refinement of agile practices within the team.

Development programs used: Eclipse for C/C++, Canoe, Candela, VFlash, Tessy, Polyspace, IAR debugger, IC5000 Win Idea debugger, Rhapsody, Gateway, Doors, Git, Jira

Business or sector Automotive embedded engineering

Jun 2019 – Jan 2021

Technical Lead/Backend Developer

Intelligent Mobile Applications SRL Timisoara, str. Alma Comea Ionescu Nr 16 Parter.

Key responsibilities:

- Writing specification and conducting customer surveys
- Architect the application and propose solutions using ReactNative and AWS services.
- Coordinate a team of two developer to implement and integrate all the features.
- Design and Implement features that run on AWS services (back end of the application).
- Final result www.trimwi.com

Technologies used: React Native, AWS services including Cognito for user authentication, Lambda functions, Dynamo DB non SQL database, S3 storage database, Git, Android Studio, Xcode, Python for automatization and ANN implementations (Tensorflow, Jupyter notebooks).

Business or sector Mobile application

May 2016 – Dec 2022

Embedded Software Developer

Lasting Software SRL, Timisoara str Republicii nr. 9

Cofounder and Product Development Lead (May 2016 - Mar 2021).

- Taking the initiative for the development of an innovative Air Pollution Monitoring system, encompassing both wearable and IoT devices.
- Successfully guided the product through five iterations, achieving Technology Readiness Level 6 (TRL6).

Key Responsibilities:

- Authored comprehensive requirement documents and specifications.
- Architected the complete system, integrating both software and hardware components.
- Executed full-cycle implementation and testing, including custom PCB design, embedded software development, cloud infrastructure setup, and mobile application integration.
- Developed and implemented low-level drivers for various microcontrollers, including STM32 M0 core, PSOC4, ATmega32, and PSOC6. Drivers covered ADCs, I2C, SPI, Timer/Counter, PWM, GPIO, Interrupt modules, external ADC modules, port extenders, and operational amplifiers.

Embedded C/C++ Software Engineer, Linux based systems (Mar 2021- Mar 2022)

- Designed, implemented, and tested a new module for offline synchronization of access codes on residential door lockers using a Linux platform.
- Developed and tested a TSL over BLE protocol in C on the Flex Gecko development kit, utilizing an ARM-based multi-protocol radio.

Embedded C Software Engineer, Linux based systems (Mar 2022- Dec 2022)

- Implemented and tested an RSA-2048 encryption algorithm in C within an existing satellite communication system.

Development programs used: PSOC Creator, DipTrace, Microsoft Visual studio, Atmel Visual Studio, PSpice Simulator, Firebase console, Xamarin, Flutter, Python for calibration algorithms (Tensorflow, Jupyter, ANN design).

Business or sector Wearables and Internet of Things

April 2015 – May 2016

Function Responsible

Continental Automotive Romania SA, Timisoara str. Siemens nr. 1.

- Analyse requirements received from the customer.
- Writing specification documents based on the requirements.
- Propose solutions for implementation and help offered in the development phase.
- Coordinate developers in order to plan, implement and test the functionality.
- Participating in reviews for System Test division and other functionalities.

Designing and developing software embedded modules and integrating them in the overall system, using C language and knowledge about electronics and microprocessors.

Development IDEs used: Microsoft visual studio 2005 and 2013, Relational Doors, Borland Together.

Business or sector Automotive embedded engineering.

November 2013 – April 2015

Embedded Software Developer

Continental Automotive Romania SA, Timisoara str. Siemens nr. 1

- Participate in writing specifications.
- Develop embedded software based on the specifications.
- Design software modules in accordance with the specifications.
- Execute module tests and ensure good functionality of software modules in an integrated system.

Embedded software developed in C language and assurance of working properly by running manual tests and debugging the application in Multi 2000 environment.

Development IDEs used: Microsoft Visual studio 2005 and 2013, Borland Together, Multi 2000.

Business or sector Automotive embedded engineering.

June 2013 – November 2013

Intern researcher – Verilog Design

Politehnica University of Timisoara, Timisoara Str. Vasile Parvan Nr. 2

GEMSCCLAIM - GreenEr Mobile Systems by Cross LAYer Integrated energy Management, CHIST-ERA/1/1.10.2012, 2012-2015

- Analyse and write specifications.
- Develop Verilog modules in order to collect power consumption and load date of a CPU in a multi core system.
- Usage of latest FPGA systems – Zinq 7000 series with ARM dual-core processor and usage of dedicated design IDEs like Vivado Design Suite.
- Execute module tests and ensure good functionality of software modules in an integrated system.

Verilog HW design language and the embedded software developed in C language and assurance of working properly by running manual tests and debugging.

Development IDEs used: Vivado Design Suite.

Business or sector IT&C Research.

June 2012 – October 2012

Intern Embedded Software Developer

Continental Automotive Romania SA, Timisoara str. Siemens nr. 1

Business or sector Automotive embedded engineering.

December 2011 – June 2012

Junior System Test Developer

Alcatel – Lucent, Timisoara

- Create automated tests based on specification.
- Execute tests on an integrated system.

Business or sector Telecom embedded engineering.

EDUCATION AND TRAINING

October 2016 – Present

Ph.D. candidate, Computers and Information Technology

"Politehnica" University of Timisoara

Ph. D. Thesis: Enhancing Life Quality through Personal Space Air Monitoring Using a Platform of Fixed and Mobile Low-Cost Devices

Level in national or international classification: ISCED 8

September 2014 – June 2016

Master of Science, Computer Engineering

"Politehnica" University of Timisoara

- Quantum computing
- Image processing and recognition
- Advanced embedded system
- Evolvable Hardware
- Integrated information systems
- Cellular data networks

Master thesis: Power consumption profiling and power harvesting case study; uses embedded profiling algorithms and methods in order to compare microprocessors and Bluetooth modules from energy consumption point of view.

Activities performed include designing the algorithms and the embedded applications, running them on different microprocessors and comparing the differences between them. Bluetooth smart technologies were also used during this process and a simple test application was developed.

Development IDEs used include PSOC Creator and Keil uVision5.

Programming language: C

Level in national or international classification: ISCED 7

September 2010 – June 2014

Bachelor of Science, Computers and Information Technology

"Politehnica" University of Timisoara

- Electronics Fundamentals
- Computer Architecture
- Programming Techniques
- Operating Systems
- Computer Networks Programming
- Software Engineering

Bachelor Thesis: Air quality monitoring system, composed of a smart hardware device that was able to collect air quality parameters, process them and send them over Bluetooth to a smartphone was developed. Custom electronic PCBs were designed and realized for sensors along with the embedded software for the sensors and the entire device.

Development IDEs included Atmel Visual Studio, Arduino, DipTrace, and Eagle.

Programming language: C

Level in national or international classification: ISCED 6

April 2013 – June 2013

Internship Liga AC Labs

Autoliv Romania, Timisoara

- Crash detection system on a remote car: writing requirements, implementing the requirements and testing the solution by development testing and validation.

September 2006 – June 2010

Baccalaureate degree and informatics certificate

"Liceul Teoretic Traian Vuia" Resita – Mathematics and Informatics English Intensive

- Mathematics
- Physics
- Programming Techniques: Pascal.
- Foreign languages: English, French.

Level in national or international classification: ISCED 5

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C1	B2	C1

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
[Common European Framework of Reference for Languages](#)

Communication skills

I have developed strong communication skills through my role of function lead, where I actively engaged in numerous high-level meetings, including direct interactions with clients. This role required me to articulate complex technical concepts clearly to ensure that client expectations were met. My ability to collaborate with diverse teams has been pivotal in driving project success.

Organisational / managerial skills

Leadership: I have demonstrated good leadership aptitude by leading many teams starting from high-school and through out the university and future work environment.

Team coordination: As the functional lead, I coordinated developers working on assigned functionalities. During high-school, I also led several student teams in creating anti-drug commercial spots and short films, whereas at University I used to coordinate the teams in almost every group project.

Time Management: I present excellent skills in prioritizing tasks, managing deadline and balancing multiple projects simultaneously.

Problem Solving: I have a strong aptitude for identifying software issues, analysing potential solutions, and implementing them effectively.

Good Communication: I excel in communication, particularly through my daily interactions with students. My strengths include understanding their issues and providing clear, effective solutions.

Digital competence

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient user	Proficient user	Proficient user	Proficient user	Proficient user

Levels: Basic user - Independent user - Proficient user
[Digital competences - Self-assessment grid](#)

Replace with name of ICT-certificate(s)

I have developed strong computer and office software skills (Word, Excel, Access, and PowerPoint), demonstrated by a Computer Skills Certificate obtained during my high school Baccalaureate exam.

My programming knowledge spans several languages, including advanced proficiency in C, medium proficiency in Verilog, Android, Java, Pascal, and SQL, and basic knowledge in iOS and Assembly, acquired through university studies, professional work, and freelance projects.

Additionally, I possess a solid understanding of PCB design and hardware technology from various project experiences.

Other skills

I am a team-oriented and sociable individual capable of collaborating effectively with diverse groups of people. My curiosity and inventiveness drive me to consistently seek out and implement solutions to any problem I encounter.

Driving licence

B

ADDITIONAL INFORMATION

Publications
Presentations
Projects
Conferences
Seminars
Honours and awards
Memberships
References
Citations
Courses
Certifications

- Article: Calibration of CO, NO₂, and O₃ Using Airify: A Low-Cost Sensor Cluster for Air Quality Monitoring – Sensors 2021, 21(23), 7977; <https://doi.org/10.3390/s21237977>
- Conference paper: Evaluation of air quality variability in Timișoara, Romania; Conference SACI 2020, Timisoara, Romania 21-23 Mai 2020.
- Conference paper: Towards Wearable Air Quality Monitoring Systems – Initial Assessments on Newly Developed Sensors; Conference: TELFOR 2019, Belgrade, Serbia 26-27 November 2019.
- Conference paper: A Study on Correlation Between Air Pollution and Traffic; Conference: TELFOR 2018, Belgrade, Serbia 20-21 November 2018. Infrastructure for Runtime
- Conference paper: A Solution For Air Monitoring and Forecasting; Conference: SACI 2018, Timisoara, Romania 17-19 May 2018.
- Conference paper: Laboratory Evaluation and Calibration of Low-Cost Sensors for Air Quality Measurement; Conference: SACI 2018, Timisoara, Romania 17-19 May 2018.
- Conference paper: Energy Profiling for Different Bluetooth Low Energy Designs; Conference: IDAACS 2017, Bucharest, Romania 21-23 September 2017.
- Conference paper: Low-Cost Hardware Infrastructure for Runtime Thread Level Energy Accounting; Conference: DATE 2016, Dresden, Germany 14-18 March 2016.
- Conference paper: An Investigation on FPGA Based Energy Profiling of MultiCore Embedded Architectures; Conference: FPGA 2016, Monterey, California February 21-23, 2016.
- GEMSCLAIM - GreenEr Mobile Systems by Cross Layer Integrated energy Management, CHIST-ERA/1/1.10.2012, 2012-2015 – was a research project done at University of Timisoara where I developed a new module in Verilog that was meant to collect consumption and load information from a multicore platform in order to optimize the run of a program from consumption point of view.
- Solar Tracker System – University semester project. The system was composed of mechanical, hardware and embedded software modules. In this project I had the role of coordinating a group of 15 persons and ensuring that the project is completed on time. The activities included development of a hardware device, development of embedded software and testing. As development language C was used with the development IDEs: Arduino, Atmel visual studio, Eagle.
- Space Guardians – is an Android game developed as a semester project in association with two other students. The development was done using Eclipse and Java as a development language.
- Peer to peer file system – was a semester project made in UNIX using C and JAVA programming languages in which a file could be downloaded over the internet from multiple persons that have it (torrent tracker).
- RF car with automated parking system – was a semester project made in association with two other students. In this project a hardware and an embedded system were developed in order to control the car. Moreover, an automated parking algorithm was implemented for the car.

The activities included the development of a hardware board and of the embedded software. The programming language used was C, while the IDEs were Eagle and Atmel Visual Studio.