**Andrei GRAMAKOV**

*The latest CV version is always available here*:

<https://agramakov.me/cv>

*Last update: 04-Apr-2024*

Embedded Systems Engineer

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# Profile

I am an electronic engineer focused on embedded systems. My experience includes working in small teams and large multinational corporations in different areas - space, aircraft, IoT, industrial automation, semiconductors.   
I have strong knowledge of C, C++, and Python and a good understanding of electronics from bits to complex electronic systems.

My experience allows me to develop an effective software architecture and support my team in the development process.

# Skills

Programming languages: C, C++, Python, Assembler, ColorForth

Processor architectures: ARM (STM32 series), AVR8 (ATTiny/ATMega series),

GreenArray F18 (GA144), RISC-V, SPARC (LEON3), Xtensa (ESP32 series)

Communication protocols: ARINC 429, CAN, CIP, I2C, RS-232, RS-422, RS-485, SPI, USB

Tools and technologies: GDB, Microsoft DAP, OpenOCD,

C++ STL, FreeRTOS, Python OpenCV, NumPy,

CI/CD, Docker, GIT, SVN, Bash, PowerShell,

Agile, GitLab, GitHub, Jira, Redmine, SCRUM, SOLID principles

PCB and schematic software: Altium Designer, EAGLE CAD, Proteus, MultiSim, KiCAD

CAD software: Autodesk Inventor, Autodesk AutoCAD, Fusion 360, SolidWorks

Mathematical modelling: MathCAD, MATLAB, Octave, SciPy

Data bases: MS Access, SQL

English language: Professional working proficiency (B2)

Russian language: Native proficiency (C2)

Czech language: Elementary proficiency (A1)

**Portfolio online**: [agramakov.me/portfolio](https://agramakov.me/portfolio)

(code examples, open source projects, etc.)

# Employment History

## Senior Embedded Software Engineer (May 2023 – Now)

Company: [2N TELEKOMUNIKACE](https://www.2n.com/), an [Axis](https://www.axis.com/) Company (Prague, Czech Republic)

Activity: *Firmware development for NFC card readers, fingerprint sensors and other access control devices. Integration of the devices with the main unit Linux software.*

* ***Software architecture development*** *for a new version of the card reader.*
* ***Establishing of the Unit Testing environment*** *and integrating in in the operational process.*
* ***Feature implementation by the customer request*** *(more than 10 new features delivered)*

*I also caused a significant positive impact for the team culture and work process:*

* ***Revised polished and crystalized the team development workflow*** *according to the AGILE principles.*
* ***Established an effective information exchange I the team*** *through a documentation system, established a team book library.*
* *Actively participating in the* ***integration of the AI technologies in the company development practices***

Tasks: - Firmware development

- Extensive debugging

- Code review

- Providing help and support to teammates

Technologies: C/C++; STM32; ARM; NFC; RFID; GIT; SAFe; SCRUM;

## Senior Embedded Software Engineer (February 2021 – April 2023)

Company: [Rockwell Automation](https://www.rockwellautomation.com/) (Prague, Czech Republic)

Activity: *Development of firmware for industrial automation computers. In detail:*

* ***Development features by design requirements*** *(about* ***80 closed stories****):*
  + *Sequence Manager – an entity for organizing complex technological processes into easily manageable sequences and subsequently provide step-by-step implementations for each sequence.*
  + *Implementation of a new OSAL for a future device*
  + *Writing unit tests*
* ***Fixing bugs*** *(about* ***50 fixed and closed exceptions****)*
* ***Code Reviewing*** *(more than* ***100 reviews as the main reviewer****)*

*Besides software development, I have actively engaged in fostering a positive team culture and driving organizational improvements within the company. Some of the key initiatives I have undertaken include:*

* ***Revamping the New Employee Onboarding Process****: I played a main role in revitalizing the onboarding process for new employees, ensuring a smooth transition for developers worldwide.*
* ***Creating a Learning-Supportive Environment****: Collaborating with the team lead, I established an environment that promotes continuous learning within the team. This involved organizing regular team-wide learning sessions and allocating dedicated time for individual learning endeavors. I personally led five learning sessions to facilitate knowledge sharing and growth.*
* ***Enhancing Team Communication and Collaboration****: To foster effective communication and collaboration, I introduced a series of meetings for reviewing team rules, synchronizing efforts at the start of each sprint, and ensuring alignment midway through.*
* ***Developing an Extensive Team Documentation Space****: Recognizing the importance of easy access to information, I spearheaded the development of a comprehensive team documentation repository. This resource ensures that team members have quick and convenient access to critical information, enabling smoother project execution and knowledge sharing.*

Tasks: - Development of MISRA compatible firmware code according to the High-Level documentation

- Development of tests

- Code review

- Providing help and support to teammates

Technologies: C/C++; Python; GIT; ARM; ABOS; OSDP; PLC; MISRA C; MISRA C++; Studio 5000 Logix Designer; Common Industrial Protocol (CIP); SAFe; SCRUM

## Embedded Software Engineer (January 2019 - December 2020)

Company: [Espressif Systems](https://www.espressif.com/) (Brno, Czech Republic)

Activity: *Development of tools and drivers for ESP-based processors. Involved in development of debugging tools like OpenOCD and GDB. Implementing and development of debug module based on DAP protocol; Implementing and developing a USB driver for ESP32-S2 chip based on TinyUSB stack.*

Tasks - Debugging tools development (Debug adapter for ESP-IDF VSCode Extension, OpenOCD)

- Middle-ware driver development (ESP-IDF framework)

- Unit tests development

- Preparing trainings for colleagues

Technologies: C/C++; Python; GIT; ESP-IDF; USB; VSCode Extensions; Powershell; CI; Docker; GitHub; FreeRTOS; TinyUSB; Xtensa; Raspberry; Microsoft DAP; OpenOCD

## Embedded Systems Programmer (January 2018 - September 2018)

Company: [Scientific Production Enterprise Digital Solutions](https://dsol.ru/en/) (Moscow, Russia)

Activity: *I worked with SPARC and RISC-V based processors projects, and with Sputnik processor (ARM architecture). I developed libraries to operating with processors and peripherals; developed tests and testing software for developed processors, their peripherals and memory; debugged code with HDL models, FPGA, and prototypes layouts. All developed IC are for spacecraft purposes.*

Tasks: - Processor design verification

- Low-level driver development

- Unit-tests development

- Development of debugging tools

Technologies: C; C++; Python; SVN; GIT; Cadence; SPARC V8; RISC-V; ARM; AMBA; I2C; SPI; RS-232; RS-422; RS-485; SpaceWire; CAN; RTOS; FreeRTOS

## Chief Specialist of Flight Test Instrumentation Department (June 2017 - December 2017)

Company: [Sukhoi Civil Aircraft](http://www.scac.ru/en/) (Moscow, Russia)

Activity: *I worked with Sukhoi Superjet 100 aircraft. My main duty was preparing the Measuring Onboard Systems for qualification trials. I programmed aircraft systems according to sensors set, developed SQL databases, wrote Python programs for information processing, and worked with measure sensors and tools.*

Tasks: - Preparing hardware and software for coming trials

- Modeling trials and troubleshooting on aviation simulator

- Development of UI for trials

- Sensor nomenclature accounting

- Sensor database development

Technologies: C#/XAML; Visual Studio; MS Access; Python; MySQL; Entity relationship diagram (ERD); Acra KAM-500; ARINC 429; AFDX; Thermal Sensors.

## Electronics Engineer (September 2015 - July 2018)

Company: [Bauman Moscow State Technical University](http://www.bmstu.ru/) (Moscow, Russia)

Activity: *My main area was in space data processing and recognition of the space satellites data. In parallel with work projects, I was doing image recognition research.*

Tasks: - Research and development in space imagery (image recognition)

- Development of experiments and experimental stands in support of current research

Technologies: Python; SciPy; OpenCV; Visual Studio; Eclipse; Octave; MATLAB; Autodesk Inventor; CCD devices; IR-, Vis-, UF- imagery devices; Raspberry Pi; ARM; STM32; CANbus; SPI; I2C; RS-232

## Electronics Engineer (August 2012 - September 2015)

Company: [Research Institute of Radio-electronic techniques (BMSTU)](http://rlm.bmstu.ru/) (Moscow, Russia)

Activity: *My work in the Research Institute was in a field of optoelectronic imagery systems for spacecraft and providing research in space satellite imagery systems.*

Tasks: - Preparing on-ground demonstration of the satellite’s (Chibis-M) system with our modification

- Research and development in space imagery (image recognition)

- Teaching Electronic Components Course for Bauman students

Technologies: C/C++, ColorForth, Visual Studio, AtmelStudio, Autodesk Inventor, MATLAB, Stack architecture processors, CCD devices, Arduino, AVR, CANbus.

# Education

## Master's degree / Specialist degree (September 2007 - Jull 2013)

[Bauman Moscow State Technical University](http://www.bmstu.ru/)

Specialty: Radio-Electronic Systems and Devices with Specialization in Laser Location and Communication Systems

Thesis: "Development of Microsatellite's Onboard Hardware Complex"

## Post-Graduate Program (September 2013 - November 2017, not completed)

[Bauman Moscow State Technical University](http://www.bmstu.ru/)

Thesis: "Unified Radio- and Optoelectronic Remote Sensing"

# Personal

Personal characteristics: positive, enthusiastic, open-minded, collaborative

Hobbies: robotics, wood crafting, art, literature

Thank you for your time!