

# Andrei Gramakov - Embedded Systems Engineer

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Latest version (PDF): [agramakov.me/cv](https://agramakov.me/cv)  
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## CONTACT INFO

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## LINKS

- LinkedIn: <https://www.linkedin.com/in/agramakov/>
- GitHub: <https://github.com/an-dr>
- Personal Page: <https://agramakov.me/>

## 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

**Portfolio online:** [agramakov.me/portfolio](https://agramakov.me/portfolio)  
(code examples, open source projects, etc.)

Programming languages	C , C++ , Python , PowerShell
Processor architectures	ARM (STM32 series), AVR8 (ATTiny/ATMega series), GreenArray F18 (GA144), RISC-V , SPARCv8 (LEON3), Xtensa (ESP32 series)
Communication protocols	ARINC 429 , CAN , CIP , I2C , RS-232 , RS-422 , RS-485 , OPC UA , SPI , USB
Tools and technologies	GDB , Microsoft DAP , OpenOCD , C++ STL , FreeRTOS , OpenCV , CI/CD , Docker , Git , SVN , Bash , PowerShell , Agile , GitLab , GitHub , Jira , Redmine , SCRUM , SOLID
PCB and schematic software	Altium Designer , EAGLE CAD , Proteus , MultiSim , KiCAD
CAD software	Autodesk Inventor , Autodesk AutoCAD , Fusion 360 , SolidWorks
Mathematical modeling	MathCAD , MATLAB , Octave , SciPy
Databases	MS Access , SQL

## Languages

- English Professional working proficiency (B2)
- Russian Native proficiency (C2)
- Czech Elementary proficiency (A2)

## Employment History

### Senior Embedded Software Engineer

**2N TELEKOMUNIKACE**, an **Axis Company** - Prague, Czech Republic

May 2023 - Now

\*~ 1 year\*

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

- Firmware development
- Extensive debugging
- Code review
- Providing help and support to teammates

### Achievements

- Software architecture development** for a new version of a card reader.
- Establishing the Unit Testing environment** and integrating it in the operational process.

- **>10 new features** delivered

I also caused a significant positive impact on 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 AI technologies in the company development practices**

## Technology Stack

C, C++, Python, Git, ARM, STM32, NFC, RFID, OSDP, Jira, SCRUM

## Senior Embedded Software Engineer

**Rockwell Automation - Prague, Czech Republic**

February 2021 - April 2023

2 years 3 months

### Activity

Development of firmware for industrial automation computers. In detail:

Typical tasks:

- Development of MISRA-compatible firmware code according to the High-Level documentation
- Unit tests development
- Code review
- Providing help and support to teammates

### Achievements

- **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.

## Technology Stack

C, C++, Python, Git, ARM, ABOS, OPC UA, PLC, MISRA, Logix Designer, Common Industrial Protocol (CIP), GitLab, SAFe, SCRUM

## Embedded Software Engineer

**Espressif Systems - Brno, Czech Republic**

January 2019 - December 2020

2 years

Activity: Development of tools and drivers for ESP-based processors. Involved in the development of debugging tools like OpenOCD and GDB. Implementing and developing of debug module based on the 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)
- Middleware driver development (ESP-IDF framework)
- Unit tests development
- Preparing trainings for colleagues

## Technology Stack

C, C++, Python, Git, ESP-IDF, USB, VSCode Extensions; Powershell, CI, Docker, GitHub, FreeRTOS, TinyUSB, Xtensa, Raspberry Pi, Microsoft DAP, OpenOCD

## Embedded Systems Programmer

**Scientific Production Enterprise Digital Solutions - Moscow, Russia**

January 2018 - September 2018

9 months

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

Typical tasks:

- Processor design verification
- Low-level driver development
- Unit-tests development
- Development of debugging tools

## Technology Stack

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

## **Sukhoi Civil Aircraft - Moscow, Russia**

June 2017 - December 2017

7 months

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 the sensor 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

## **Technology Stack**

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

## **Electronics Engineer**

**Bauman Moscow State Technical University - Moscow, Russia**

September 2015 - July 2018

3 years 11 months

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

## **Technology Stack**

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**

**Research Institute of Radio-electronic Technologies (BMSTU) - Moscow, Russia**

August 2012 - September 2015

3 years 2 months

Activity: My work in the Research Institute was in the 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

## **Technology Stack**

C , C++ , Python , ColorForth , MATLAB , Visual Studio , AtmelStudio , Autodesk Inventor , Arduino , AVR , CANbus , CCD devices , CANbus

# **Education**

## **Master's degree / Specialist degree**

**Bauman Moscow State Technical University**

September 2007 - July 2013

6 years

- **Major:** Radio-Electronic Systems and Devices
- **Minor:** Laser Location and Communication Systems
- **Thesis:** "Development of Microsatellite's Onboard Hardware Complex"

## **Ph.D., not completed**

**Bauman Moscow State Technical University**

September 2013 - November 2017

4 years

- **Thesis:** "Unified Radio- and Optoelectronic Remote Sensing"

# **Personal**

**Personal characteristics**    proactive , collaborative , team player , positive , enthusiastic , consistent , detail-oriented

**Hobbies**    robotics , wood crafting , fine arts , literature