

# Andrei Gramakov - Embedded Systems Engineer

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Latest version: [agramakov.me/cv](https://agramakov.me/cv)  
[PDF]: [agramakov.me/cv-pdf](https://agramakov.me/cv-pdf)

## 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 electronics 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)

## EDUCATION

### MASTER'S DEGREE / SPECIALIST DEGREE

**Bauman Moscow State Technical University** (2007-2013)

- **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** (2013-2017)

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

# 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 a 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 in the team** through a team internal documentation, 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

# PERSONAL

Personal characteristics	proactive, collaborative, team player, positive, enthusiastic, consistent, detail-oriented
Hobbies	robotics, wood crafting, fine arts, literature