Andrei Gramakov - Embedded Systems Engineer

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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
> (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 - Jull 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`