Andrei GRAMAKOV

Embedded Systems Engineer

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https://agramakov.me/cv

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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** (code examples, open source projects, etc.)

Employment History

Senior Embedded Software Engineer (May 2023 – Now)

Company: **2N TELEKOMUNIKACE**, an Axis 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** (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** (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** (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** (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** (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)** (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

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

Thesis: "Unified Radio- and Optoelectronic Remote Sensing"

Personal

Personal characteristics:	positive, enthusiastic, open-minded, collaborative
Hobbies:	robotics, wood crafting, art, literature