Alexander Kondratyev

Embedded Engineer

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Summary

Embedded Software Engineer with 7+ years of experience in firmware development, system design, and series production. Development of more than 20 embedded devices in the fields of communication, data processing, and automation. Experience in team leadership, architecture design, hardware development, and CI/CD for microcontrollers.
Valid work permit (settlement permit).

Education

2025 Apr | 2023 Dec

German Language Course and Integration Course

inlingua — Iserlohn

- Life in Germany Certificate
- B2 Certificate

2022 Jun | 2018 Sep

PhD Student

Omsk State University — Omsk

- Dissertation: Modeling of microwave communication channels based on the prediction of the state of the ionosphere.

2018 Jun | 2016 Sep

Master of Science in Physics

Omsk State University — Omsk

- Thesis: Prediction of the critical F2 frequency using statistical analysis.
- Master's degree recognized by the Central Office for Foreign Education (ZAB). (Statement of Comparability)

2016 Jun | 2012 Sep

Bachelor of Science in Physics

Omsk State University — Omsk

- Thesis: Investigation of the intensity distribution in the cross-section of a laser beam.

Work Experience

2023 May | 2021 Oct

Department Head

Omsk Scientific Research Institute of Instrument Engineering

- Led a team of 11 people
- Designed software architectures and electronic circuits for 12 devices
- Developed a complete set of test methods and test programs for acceptance testing, which enabled the standardization of the quality control process in series production

2023 May | 2019 Oct

Researcher — Part-time

Institute of Radiophysics and Physical Electronics – Subdivision of the Omsk Scientific Center of the Siberian Branch of the Russian Academy of Sciences

- Conducted scientific research to improve the prediction of the ionosphere's appearance.
- Authored 5 scientific articles and gave presentations at conferences.

2021 Oct | 2020 Jan

Software Engineer (Middle)

Omsk Scientific Research Institute of Instrument Engineering

- The implementation of Continuous Integration and Continuous Deployment for microcontrollers reduced the number of software errors by 30% and shortened development time by 15%.
- The introduction of Clean Architecture principles significantly improved the efficiency and development speed of microcontroller software.

2020 Jan | 2018 Jan

Software Engineer (Junior)

Omsk Scientific Research Institute of Instrument Engineering

- The introduction of Doxygen improved code readability and enabled the automation of documentation generation.
- Debugging and optimizing the code increased system performance by 20%.

2018 Jan | 2016 Oct

Engineer

Omsk Scientific Research Institute of Instrument Engineering

- Wrote code in C/C++.
- Implemented graphical interfaces for embedded systems.

Conferences, Articles & Certificates

- **Article in the scientific journal Advances in Space Research** 2023
  Improving the forecast accuracy of F2 layer peak properties using artificial neural networks
- **Article in the journal Radio Communications** 2022
  Algorithm for increasing the accuracy of total electron content recovery using code and phase delays of global navigation satellite system signals
- **Article in the journal Radio Communications** 2021
  Implementation of adaptive product customization processes in mass production
- **VI. International Scientific and Technical Conference** 2021
  Method for adjusting the empirical coefficients of the ionospheric model to improve the accuracy of predicting the critical frequency of the F2 layer
- **VI. International Scientific and Technical Conference** 2021
  Evaluation of the efficiency of using GNSS to predict total electron content
- **Article in the scientific Journal of Atmospheric and Solar-Terrestrial Physics** 2020
  Improving the accuracy of the ionospheric model using artificial neural networks
- **Article in the journal Radio Communications** 2018
  Adaptation of the ionospheric model for calculating the critical frequency of the F2 layer
- **IV. International Scientific and Technical Conference** 2017
  Forecasting the critical frequency of the F2 layer based on statistical analysis methods
- **Regional student scientific-practical conference "Youth of the Third Millennium"** 2016
  Intensity distribution in the cross-section of a laser beam

Projects (Selected)

- **Automated Control System** 2023
  Role: Department Head / Middle Embedded Engineer
  Technologies: STM32, C/C++, FatFS, SPI, UART, USB, CI/CD
  - Developed the software architecture and designed electrical schematics and printed circuit boards.
  - Led the development team including project planning and task allocation.
  - Developed an automated test framework for series and acceptance testing.
  - Accompanied the entire product lifecycle up to series production readiness (documentation, optimization, commissioning).
- **Base Station «BS-500» of the Tetra standard** 2020
  Role: Middle Embedded Engineer
  Technologies: STM32, C/C++, FatFS, SPI, UART, I2C, USB
  - Developed firmware for monitoring and regulating the carrier frequency and output power of the transmitter module.
  - Implemented software modules for converting parallel communication protocols between the components of the transmitting/receiving system.
  - Collaborated on the system architecture and coordinated technically with hardware developers.

Awards

- **Winner in the nomination "Best Software Solution of the Year"** 2023
  for the development of an automated control system
- **Winner of the All-Russian Competition "Engineer of the Year"** 2022
  link
- **Best Young Professional of the Year in Software Development** 2021
  link
- **Best Young Professional of the Year in Software Development** 2021
  link

Languages

- **Russian** Native
- **German** B2 (DTB Certificate)
- **English** B2

Technical Skills

Embedded: C/C++ | STM32 | AVR | FreeRTOS | JTAG | SWD | UART | SPI | I2C | 1-Wire | USB

Tools: GitLab CI/CD | GoogleTest | Doxygen | KiCad | Docker | Qt | Python

Measurement Equipment: Oscilloscopes | Logic Analyzers | Signal and Spectrum Analyzers