IVAN KUVALDIN

Software Architect and Engineering Lead

PROFILE

I am software engineer, designer and architect with excellent mathematics and electrical background. I like to create machines and bring them to life - design electronic systems and software for them. My main idea is to teach machines help humanity on their way to unconditional beauty.

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location Ukraine

ROLES

- **System architector, software designer**

Move from idea to technical task, describe idea in details and write technical task. Move from TT to system design, draw diagrams, detalize parts. Design algorithms, data flow diagrams, use case diagrams, user interaction schemas. Build bridges between existing subsystems.

- **Project / team leader**

Drive the team to successful release of reliable, reusable, extensible and handy application. Make important decisions and be responsible for them, think different and ahead.

- **C++ engineer**

Think C++. Write code in C++ using modern frameworks. Write reliable, reusable, readable and extensible programs. STL, Qt, Boost in all their manifestations.
Also can work in Rust and Golang.

- **DevOps**

Create continuous integration / continuous deployment systems for any kind of software. Build, test, deploy applications in multiple environments with multiple configurations in various combinations.

- **Systems and networks administration, security and reliability**

Configure and maintain interaction between complex independent systems. Configure OS (usually Linux), and services on top of it. Write script scenarios in Bash, Fish, Ruby, etc.

- **Mentor**

Have an experience teaching juniors, inspire indivianuls to keep conding on a higher level. Share applicable knowledge in understandable form.

PERSONAL PREFERENCES AND FEW WORDS ABOUT IVAN

I love FOSS - free and open-source software. I love beauty in technics and software, everything which helps us humanity be more kind, makes the life easier and saves time to keep in mind own destiny. I wish to direct my forces and creativity in this field.

The imagination of company of my dream

Company is not a place, firstly, company is the people, who are making it. In a good company every member cares about the result product, because uses it in everyday life (if that is not a spaceship ;) Good company is a chance to find friends and work together on cool things. Be pround for things we do is reason to do.

That is all about happiness.

I am looking for

- a company or project where my skills and ideas can fit as the best
- lead the project
- a team where our joint work will be productive and effective
- professional growth
- nice place in the world where soul sings happy
- remote job with possible business trips

PERSONAL PREFERENCES

I like openness and simplicity. I am Linux-man and love philosofy of Linux, GNU and BSD, software means "freedom". The only way to keep your data safe is to be able to audit software you use.

Things I would like to do (for example):

- communications via decentralized networks
- automotive, autopilot, flying or swiming machines and drones
- medical equipment and bionic dentures
- music and sound equipment, audio/video applications
- robots

STRONG SIDES

- System/SW architecture, interaction protocols, async API
- expert in modern `C++`, `std::`, `boost::`, `Qt5`
- lead the people and organize communications
- good in continious integraion and deployment (CI/CD) via GitLab, Travis CI, Circle CI, Jenkins
- project management, code organization, development flow with Git, GitLab, GitHub, Jira, etc.
- algorithms for DSP, streaming media, precision measurement filtering, controlling system, synchronization etc.
- can write good exhaustive technical and design documentaion

I bring to the customer's projects

- high quality reusable code in C++11..20
- modern asynchronous event-driven high-performance code (with Qt's signals/slots or boost::asio)
- configure and support a good cross-platform build system
- unit and integration tests
- complex automated distributed tests (useful for big highly integrated and loaded systems)
- memory leakage, security, reliably and performance automated tests
- nice and clear structure to make code maintainable and %extendable

dislike

I hate some common policies of industirial giants like gigle, azamon, softmicro, bacefook. I avoid getting in touch with them whenever it's possible. There is a number of alternatives.

SKILLS

PROGRAMMING LANGUAGES

- c and c++ aspire to know them as native :)
- shell: bash, zsh and fish
- Qt/QML/JS
- Python for scripting and fast prototiping
- LabVIEW block diagrams - cool for quick and robust scientific analysis

Others: rust, golang, D, erlang, elixir, haskell.

Also familiar with javascript, typescript, coffescript, node.js

I do not like Java, Kotlin, Dart, but even with them can do some prototiping.

Created site in HTML+CSS without JS.

After 11 years in development the language is not a barrier - it is a tool more or less suitable for a standing task.

EMBEDDED. SKILLS, EXPERIENCE, KNOWLEDGE

- RTOS and real-time multi-thread applications. Parallel programming
- digital signal processing (DSP) programming and algorithms. Filters FIR and IIR, FFT, specters, complex data computing, frequency counting, fussy logic, PID control.
- experienced in writing low-level drivers for internal and external peripherals using many technologies DMA, SPI, I2C, I2S, MII, RMII, etc.
- collect data from ADC and form signals with DAC
- good knowledge of network protocols stack Ethernet, MAC, TCP/IP, FTP, HTTP, and others.
- familiar with fundamentals of ARM (in general), ARM Cortex-M, AVR architectures
- strong knowledge of architecture of most popular microcontrollers and SoCs
- overall architectural understanding of Linux based systems and in particular embedded systems
- deep understanding of reliable industrial sensor monitoring systems. Architecture, reliability standards, terminology
- high reliable systems as described by MISRA, ISO 26262, IEC 61508

SECONDARY SKILLS

- Linux administration. Network configuration. Shell, bash, fish scripting. Arch Linux, OpenSuse, Debian, Ubuntu, Mint.
- Network administration; and network security
- Windows administration. PowerShell scripting, Group policies, Active Directory. [*from a deep ages*]
- Write competent technical documents, articles and comments, also technical issues and bug reports

3RD-LEVEL SKILLS *(OLDER EXPERTISE)*

- Analog and digital circuit design and PCB tracing. Know how to design high-precision analog circuits, reliable digital circuits
- 3D modelling. Mostly cases for electronics of sheet metal and plastic. My open-source models on [grabcad](https://grabcad.com/ivan.kyb-1/projects/public)

TOOLS

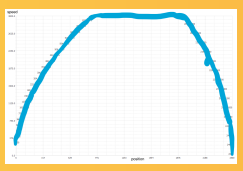
- Compilers, toolchains: GCC, Clang, XCode
- Version Control: Git, Mercurial; also familiar with SVN and CVS but dislike them
- PlantUML and Draw.io to draw diagrams
- Jira, Redmine, Bitrix24
- Google test and Google Mocks, Boost::test
- IDE: VS Code, CLion, Qt Creator, Eclipse, Keil MDK-ARM (uVision), IAR workbench.
- ECAD: Altium Designer, Altium CircuitMaker
- CAD, 3D-CAD: SolidWorks, Kompas-3D, VariCAD
- LibreOffice, Markdown

SOFTWARE I AVOID TO USE

Giant corporations aims to track anything and everything. I do not accept their policies and contracts. Cannot use most of thier products.

PROJECTS

More projects are at kuvaldini.pro



ACCDECEL

卐 is a well-tested calculator of

linearly accelerated and decelerated motion.

卍 это ладно проверенный

калькулятор равноускоренного движения.
It calculates the positions at which motor speed should be changed. Usually it is enough to change speed from 100 to 10 times per second. Change speed after every step is inefficient.

🌀 The calculator itself is a

one-header class.

🌊 Supplied with Qt project to

show chart.

AUTORSYNC

AutoRSync is a live file syncronization utility written in bash using rsync and fswatch. It is able to monitor changes and synchronize files rapidly from one host to another.

BYTE_VECTOR

byte_vector is a family of C++ types and functions to provide next functionality:

- serialization to sequence of bytes
- deserialization from sequence of bytes
- print array of bytes in hex to any std::ostream like cout, cerr or stringstream

byte_vector is a struct extended from std::vector``. It provides ability to serialize and deserialize C++ basic types and classes by using family of template operators byte_vector<< and byte_range>>.

EMPLOYMENT HISTORY

HIDDEN

Nov 2021 → current

Software Architect and Lead

Automotive embedded applications. Safety and security.

I am participating in project as expert, consultant, SW architect.
The project is automotive on-board computer to assist driving.

SORAMITSU

Feb 2021 → Nov 2021 (1 year)

Senior Software Enginer

Blockchain-based decentralized hyperledger for banking systems and computed assets accounting. FOSS (free and open source).

My role is C++ engineer and DevOps. The tasks are: fix bugs, discuss and implement new features coupled with networking, syncing, database connectivity. I designed and implemented CI/CD pipeline on GitHub Actions. Very good project. I am proud of paticipation in a perfect team of cool professionals.

RING

Feb 2019 → Oct 2020 (1 year, 9 months)

Senior Software Enginer

Cameras, lights and home automation.

I participated in firmware development of powered camera devices family. Under the hood there was a Linux-based SDK for ARMv7 with drivers, build system, common packages, and Ring services written in C++. Mainly I developed, ported, and maintained user-space C/C++ programs, and also had a deal with drivers, BSP and build system.

ENVISIONTEC

Oct 2017 → Jan 2019 (1 year, 4 months)

Lead C++ engineer and architect, mathmatician

Company desings, develops and produces stereolitorgaphic 3-D printers.

What I did:

- Developed firmware for microcontroller in C/C++ for hard-real-time actions: drive motors and gather data from sensors.
- Developed control software for 3D printers in C++/Qt for Linux.
- Desinged software architecture and development plan
- Developed update-delivery system to update 3d-printers.
- Drove development process in team of 4 programmers
- Devops: configure and support continuous integration / continues deployment system - GitLab CI/CD and Jenkins

FREELANCE

2016 → 2017 (1 year)

Software engineer/digner /architect

I implemented cross-patform DSP algorithms in C++, wrote several diffenent network solutions, suitable for embeeded devices, desktops and mobile devices. That projects were about processing sound signals and multicasting channels over the real-time network. As architect I designed and draw several ideas and solution for indoor navigation systems from content servers to client application.

One project was about Bluetoth LE sensors and beacons utilizing Nordic Semiconductor chips from nRF family with their proprietaty stack.

NORMA-C

May 2013 → Sep 2017 (4 years, 5 months)

Hardware Engineer, Software Engineer, System designer

Norma-C.com designs and develops vibration measurement systems. From sensors and primary transducers to solid multilevel systems.
I am one of the idea maintainers. The field of my responsibilities is pretty large, but main position is **senior embedded software developer** with solid knowledge in HW development, circuit and PCB design.
Our devices collects data from sensors in real-time, analyze signals and send data and result to the server via network for post non-realtime analyze. I also take part in algorithm design for many elements in the overall system.

ERGOS

Apr 2012 → May 2013 (1 year, 2 months)

Software and hardware enginer

Ergos LLC is a Ukrainian company, which develops, produce and sell industrial measurement and control devices. Among them temperature and vacuum meters and controllers, complex measurement systems with integration to industrial super systems. And yet another division develops precision temperature calibrators for metrology.

My position and responsibilities

- design analog and digital schematics, trace and test them.
- minimize noise in analog parts of device
- upgrade previous devices generation using modern integrated circuits
- design measure and filtering algorithms
- design 3D models of cases for devices of sheet metal and plastic (secondary)
- render 3D models (secondary)

EDUCATION

KHARKIV NATIONAL UNIVERSITY OF RADIOELECTRONICS

Sep 2007 → Jun 2012

M.S. Radioelectronic equipment and telecommunication

In the university I learned basics of radio-electronics, electrical engineering, circuit and PCB design, computer science, informatics, programming.