

General Information

**Contacts** Telegram - @niko\_zvt, niko.zvt@gmail.com

**Date of Birth** 14th July 1994

**Languages** Russian, English

**Location** Istanbul, Turkey



Education

2012 - 2018

**Master of Science (Hons). Grade 5 out of 5**  
[Bauman Moscow State Technical University](#), Moscow, Russia.

*The basic principle of the Bauman Engineering School is a combination of deep theoretical knowledge and extensive practical skills. The University trains specialists who are able to conduct developments in the field of high technologies, knowledge-intensive industries, who have knowledge in the field of economics, management, digital solutions, entrepreneurship.*

- Space Applications of Composite Materials.
- Composite Materials 3D Printing.
- Scientific research in the field of fundamental and applied problems of designing units and compartments.
  - Artificial earth satellites.
  - Planetary and orbital stations.
  - Space antennas.
  - Reusable spacecraft.
  - Space rockets and rocket engines.

2012 - 2016

**Bachelor of Science (Hons). Grade 4.75 out of 5**  
[Voronezh State Technical University](#), Voronezh, Russia.

*The flagship university of Voronezh region which combines educational, scientific, staff, and technical capacity. Voronezh region is one of the most developed industrial centers of the country playing the key role in the domestic industry. Voronezh enterprises produce rocket engines, airliners, modern means of communication.*

- Solid-state physics, Aerospace Composite Materials.
- Activities and societies - Ferroelectric Materials Laboratory.
- Research in the design and manufacture of products from polymer composite materials.
  - Carbon plastics for Sukhoi Superjet 100.
  - Laminated metal-polymer composites for Irkut MC-21.

Experience

DEC 2021 - NOW

**Principal Software Engineer (full-time)**

[Mighty Buildings, Inc.](#), Istanbul, Turkey.

*Our mission is to help solve the housing and climate crises by transforming the way the world builds homes. Using innovative material science, robotics and automation, we're working to make affordable, carbon-neutral housing a reality for everyone. Our goal is to produce fully carbon-neutral houses by 2028, 22 years ahead of the construction industry.*

- Continuous Acquisition and Life cycle Support initiatives.
- Analysis of the company's digital maturity.
- Formation of a complete roadmap of industrial processes within the digital environment.
- Deployment of message brokers, OPC UA infrastructure.
- Digital transformation of production.
  - Analysis of production layout.
  - Design of digital shadows of robotic units.
  - Design and implementation of architecture MES layout for high-tech micro-factories.

MAR 2020 - NOW

**Senior Material Scientist (part-time)**

[Mighty Buildings, Inc.](#), Istanbul, Turkey.

- Physical and mathematical modeling of effective characteristics of heterogeneous materials.
- Theoretical support for material scientists.
- Planning and conducting experiments.
- Topology optimization of structures made of composite materials.

MAR 2020 - DEC 2021

**Senior Software Engineer (CAD/CAE)**

[Mighty Buildings, Inc.](#), Oakland, California, US

- Development design automation algorithms.
- Development an internal plugin for Autodesk Revit.
- Development BIM design simplification tools.
- Research and modification of CAM tools.

MAY 2019 - MAR 2020

**Middle C++ Developer (CAD/CAE/3D Geometric Kernel)**

[Top Systems, Ltd.](#), Moscow, Russia.

*Top Systems is the leading Russian developer of advanced, integrated CAX/PLM.*

- 3D Geometric Kernel.
  - Analysis of the [Parasolid](#) kernel to identify critical functionality for implementation in the CAD system.
  - Cooperation with the [RGK geometric kernel](#) design team - testing of kernel functions, elimination of critical errors and bugs, introduction of new operations.
- CAD software.
  - Development of computational geometry algorithms.
  - Development of main 2D CAD tools - Points, Curves, Polygons, etc.
  - Development of main 3D CAD tools - Primitives, Spatial curves (B-splains), Boolean operations, Scaling and Transformation tools.
  - Development of shaping operations - Extrusion, Rotation, etc.
  - UI/UX Development for CAD/CAE tools.
- CAE software.
  - Development of pre-/postprocessing finite elements algorithms.
  - Development of finite elements.

FEB 2017 - MAY 2019

**Head Research Project Engineer**

[Kompozit, JSC](#), Moscow - Korolev, Russia.

*JSC «Kompozit» - leading enterprise of materials science at [ROSCOSMOS](#).*

- Research of the properties of materials and coatings of space rocket technology.
- Physical and mathematical modeling of composite materials.
  - Numerical calculation of [body-reinforced carbon-carbon composites](#).
  - Design of mathematical models to describe representative volume element of [C-C/C-SiC composites](#).
- Investigation of [CFRP](#), [GFRP](#), and [organoplastics](#) for critical parts of space rockets.
- Curator of experimental [mechanical](#) and [thermal](#) tests of non-metallic composites.

SEP 2016 - FEB 2018

**Research Project Engineer**

[Contact-Technology NPP, LLC](#), Moscow, Russia.

*Contact-Technology, LLC has developed and manufactured the entire hardware complex of technical means for the ground tracking station of the international radio astronomy project "[Spektr-R](#)" ("[Radioastron](#)") and "[Spektr-M](#)" ("[Millimetron](#)"). Currently, these technical facilities are operated by the [Lebedev Physical Institute of the Russian Academy of Sciences \(LPI RAS\)](#).*

- A set of equipment developed and manufactured as part of the LPI RAS was placed in [The National Radio Astronomy Observatory \(NRAO\)](#) of the United States, located in Greenbank.
- Performing calculations of mechanical and thermal loads on a satellite onboard signal generator.
- Supervising the procurement of radio-electronic components for the satellite onboard signal generator.

Open Source Projects

2017 - NOW

**[Ariadne](#)**

- Ariadne is a rational and adaptive irregular reinforcement algorithm. Like Ariadne's threads, the algorithm creates paths for reinforcing structural products that will be 3D printed.
- Ariadne is a research project that allows you to maximize the potential of composite structures and materials. For example, to increase the bearing capacity of products, to change the mass and material consumption, to reduce the cost.

Courses and Certifications

2022

- University of Michigan. [The Finite Element Method for Problems in Physics](#).
- MESA International. [Implementation and integration of MES-systems](#).

2021

- TÜV SÜD. [D/P FMEA Implementation](#).
- AgiliX Consulting. [AgiliX Consulting, Agile Fundamentals Training Course](#).
- BasisSoft, LLC. [OriginPro Introductory](#).

2020

- St. Petersburg University. [Introduction to the Mechanics of Deformable Solids](#).

Technology Stack

*Programming Languages*

- C#, C/C++ - main languages;
- Python, Bash, G-code, no-code solution, - little experience;
- NASM, Lua, QBasic, Pascal, Fortran - have fun;

*Frameworks, Libs & Tools*

- .NET Core, .NET Framework (WPF/WinForms);
- STL, Boost, CGal, Eigen, FeResPost;
- UML (PlantUML), HTML/CSS/Markdown/YAML (Jekyll), LaTeX;
- Git, CMake, Weedle, AWS;
- CAD - Parasolid, RGK, ACIS, DevDept Eyeshot, Grasshopper;
- CAE - NX/Nastran, ANSYS, COMSOL;
- Math - MATLAB, Maple, Maxima, OriginPro, LabVIEW;

*Patterns, Principles, Techniques, Compilers, OS*

- OOP, DDD, TDD;
- Architectd patterns - MVC, MVVM, Microservices, EAI/ESB (SOA);
- Messaging patterns - MQTT (RabbitMQ), XMPP (ejabberd);
- GNU/Linux, Windows;
- GCC/G++, MSVC;

Academic Interests

*Materials Science and Engineering.*

- Composites.
- Nanomaterials.
- Metamaterials.
- Micromechanics of Composites.
- Materials Processing.
- Materials Testing.

*Applied and Computational Mathematics.*

- Mathematical Models.
- Finite Element Analysis.
- Multiscale Materials Modeling.
- Topology Optimization.
- Shape Optimization.

*Additive Manufacturing.*

- 3D Printing of Composite.
- Rapid Prototyping.

*Structural Engineering.*

- Multifunctional Composite Structures.
- Structural Reliability.
- Failure Analysis.
- Fracture Mechanics.

Other Interests

*Hobbies:* Ant breeding and ant farms, badge collecting, planespotting, mineral DDoS, etc.