Vyacheslav Fedorov | Python Developer

Personal Data

Place and Date of Birth:	Novosibirsk, Russia | 28 April 1998
Address:	Novosibirsk, Russia
Phone:	+7 960 7924340
Marital status:	Married with two children
Nationality:	Russian
email:	slava@fuodorov.ru
Website:	fuodorov.github.io

Summary of Qualification

I began to practice general astrophysics and radio astronomy at the Pushchino Radio Astronomy Observatory in the summer of 2015. In the fall of 2015, I entered the M.A. Lavrentiev physics and mathematics school at Novosibirsk State University (NSU). In 2017, I practiced at the Vega educational automated astrophysical complex at NSU as a student at NSU. At the invitation of the fall of 2017, I began to work as a laboratory assistant in the atmospheric research department of NSU in the space experiment laboratory, where I investigated the possibility of creating an IR horizon sensor for an ultra-small spacecraft and at the same time practiced teamwork and programming in Python and C++.

Since the fall of 2018, I have been practicing the Budker Institute of Nuclear Physics (BINP). I am engaged in the transportation of a high-current electron beam in a linear induction accelerator LIA–20. I work closely with the ASTRA and WARP PIC-codes, with the SAM program, and also develop the Python library KENV and REDPIC. I studied the Python syntax in depth and was interested in machine learning.

Since 2020 I have been studying at ITMO University in the field of Optoelectronic devices and systems. I wrote a review article on "Diagnostics of charged particle beamsin accelerators by means of optoelectronic systems". Unfortunately due to family reasons I had to stop my studies at ITMO University.

Since Spring 2021, I have been working as a Python Backend Developer at Sibers outsourced company in the Java department. Internally training in Python (Django), JavaScript (React), Java (Spring), PostgresQL, LiquiBase, Kafka, Celery, Redis, RabbitMQ. Developed a web application for American doctors for recognition (Python) and CPT code assignment (Django and React).

Work Experience

Current | Software engineer in Sibers, Novosibirsk
Apr 2021 | *Backend development for web applications*
Internally training in Python (Django), JavaScript (React), Java (Spring), PostgresQL, LiquiBase, Kafka, Celery, Redis, RabbitMQ.
Developed a web application for American doctors for recognition (Python) and CPT code assignment (Django and React).

Jan 2021 | Laboratory assistant in BINP, Novosibirsk
Sep 2018 | *Transportation of a high-current electron beam in LIA–20*
The article "Transportation of a high-current electron beam in a linear induction accelerator LIA–5" is written. Released KENV Python library. Learned to work with PIC-codes ASTRA and WARP. We are developing our own PIC-code in Python. Improved programming skills in Python, in particular, I chose Jupiter Notebooks for scientific tasks. I gain knowledge of the beam dynamics in the accelerators.

Sep 2018 | Laboratory assistant in NSU, Novosibirsk
Sep 2017 | *Creating an IR horizon sensor for an ultra-small spacecraft*
A report is presented on the possibility of creating an IR horizon sensor for an ultra-small spacecraft, in particular, a sample of an IR horizon sensor and a test bench are made, test software for an IR sensor is written, and successful tests have been carried out on a test bench. Learned to work in a development team with Git, acquired programming skills in Python and C++. Gained knowledge about orientation systems and radiation protection of spacecraft.

Computer Skills

Basic Knowledge: HTML, CSS, Linux
Intermediate Knowledge: C, C++, Java, JS, PostgreSQL, Mathcad, Compas-3D, AutoCAD
Advanced Knowledge: Python, MATLAB, GitHub, LaTeX, ASTRA, WARP, SAM

Languages

Russian: Mothertongue
English: Intermediate Knowledge
German: Intermediate Knowledge

Papers

December 2021	V. Fedorov and A. Charchenko, **"Python Async API"** Seminar in Sibers	| Publication
November 2021	D. Nikiforov et al., **"Investigation of high current electron beam dynamics in linear induction accelerator for creation of a high-power THz radiation source"** Journal of Instrumentation	| Publication
April 2021	V. Fedorov and A. Chertov, **"Diagnostics of charged particle beams in accelerators by means of optoelectronic systems"** Labwork in ITMO	| Publication
March 2020	D. Nikiforov, M. Blinov, V. Fedorov, A. Petrenko et al., **"Transportation of a high-current electron beam in a linear induction accelerator LIA–5"** Particles and Nuclei	| Publication
June 2018	V. Fedorov and M. Zadorozhny, **"Study of the possibility of creating a horizon sensor for the orientation system small spacecraft based on IR temperature sensor"** Labwork in NSU	| Publication
Dec 2017	V. Fedorov and A. Yatsky, **"Experimental study of high-frequency ignition parameters glow discharge"** Labwork in NSU	| Publication
Dec 2016	V. Fedorov, O. Bragin, L. Prokopyeva, **"Statistical processing of measurement results"** Labwork in NSU	| Publication

Qualifications

Spring 2019	Driving license (category B), **driving school "Lights"**, Novosibirsk
Spring 2017	German language courses (A2), **Goethe Institut**, Novosibirsk
Summer 2016	German language courses (A1), **Goethe Institut**, Novosibirsk
Spring 2016	All-Russian Olympiad in Astronomy, **MSU**, Saransk
Spring 2012	SAMBO Mayor Cup, **sports school "Source"**, Novosibirsk

Education

May 2022 – Jan 2022 — Programmer student, School of Data Analysis, **Yandex**, Moscow
Major: Algorithms and Data Structures
Thesis: "Basics of algorithms and data structures for developers"
Advisor: Ilya Muradyan | Detailed List of Exams

May 2022 – Sep 2021 — Programmer student, School of Data Analysis, **Yandex**, Moscow
Major: Middle Python Developer
Thesis: "The design and development of an online movie"
Advisor: Evgeny Morozov | Detailed List of Exams

Sep 2021 – Sep 2020 — Engineer student, **ITMO University**, St. Petersburg
Progress: 2/5 course | Major: Opto-electronic devices and systems
Thesis: "Diagnostics of charged particle beams in accelerators by means of optoelectronic systems" | Advisor: Alexandr Chertov
GPA: 4.93/5 | Detailed List of Exams

August 2020 — Terascale Summer School, **Deutsches Elektronen-Synchrotron**, Hamburg
Thesis: "Particle- and astro-particle physics" | Advisor: Olaf Behnke

July 2020 – Sep 2016 — Physics student, **Novosibirsk State University**, Novosibirsk
Progress: 3/4 course | Major: Physics of accelerators
Thesis: "Transportation of a high-current electron beam in a linear induction accelerator LIA–20" | Advisor: Danila Nikiforov
GPA: 4.84/5 | Detailed List of Exams

July 2016 – Sep 2015 — General high school education, **M.A. Lavrentiev physics and mathematics school at Novosibirsk State University**, Novosibirsk
GPA: 4.91/5 | Detailed List of Exams

August 2015 — Summer physics and mathematics school in **M.A. Lavrentiev physics and mathematics school at Novosibirsk State University**, Novosibirsk
Thesis: "Olympiads mathematics and physics"
Advisor: Mikhail Afanasyev | Certificate

June 2015 — Summer school of young astrophysicist in **Pushchino Radio Astronomy Observatory**, Pushchino
Thesis: "Theoretical and observational astrophysics"
Advisor: Vladimir Samodurov | Certificate

Spring 2015 — School of communication skills of **center "Spring"**, Novosibirsk
Thesis: "Secrets of effective communication"
Advisor: Catherine Belousova | Certificate

May 2015 – Sep 2014 — Distance education center of **Lomonosov Moscow State University**
Thesis: "The basics of astronomy in tasks"
Advisor: Natalya Shatovskaya | Certificate

Several Facts About Me

I am interested in beam dynamics in linear accelerators and astrophysics.
I prefer Python to other programming languages.
I have experience in public speaking (up to 50 spectators).
I have a rank in chess and Russian wrestling Sambo.
My favorite book is Anna Karenina by Tolstoy.
I like the series of books by "Uncle Bob" (Robert Martin).

References

Feb 2020 | Dr. Alexey Petrenko, **BINP**, Novosibirsk

I know Vyacheslav Fedorov as a well-qualified physicist...

I know Vyacheslav for about one year since we started working on simulations of intense space charge dominated beams at Budker INP. Vyacheslav Fedorov's work is focused on the theoretical part of our project, namely the development of a fast beam envelope code and its benchmarking against more detailed Particle-in-Cell codes (like WARP and ASTRA) as well as experimental data. This work was very successful and over less than a year Vyacheslav was able to develop an analytical and numerical framework implemented as a modern Python library: kenv. This code proved to be a very useful tool in the design and operations of several high-current accelerators.

| Read completely

Jan 2020 | Dr. Pavel Logatchov, **BINP**, Novosibirsk

While working in BINP Vyacheslav showed himself as a promising young specialist and researcher...

With his active participation, a code based on the solution of the Kapchinsky-Vladimirsky system of equations was developed. Now this code is actively used to tune a high-current linear accelerator in BINP. In addition, he have high programming scills on Python. The last task that he solved on Python was to use a genetic algorithm for unfolding electron beam parameters using spot size measurement from solenoid scan.

| Read completely

Diploma of Algorithms and Data Structures

Student: Fedorov Vyacheslav Vasilievich

Name of subject	Academic Hrs.	Grade
Introduction and Two Pointers	7	Passed
Estimating the Complexity of Algorithms	27	Passed
Basic Data Structures	20	Passed
Recursion and Sorting Algorithms	20	Passed
Hash Function and Hash Tables	20	Passed
Tree Algorithms	20	Passed
Algorithms on Graphs	20	Passed
Greedy Algorithms and Dynamic Programming	27	Passed
Algorithms on String	27	Passed

Diploma of Middle Python Developer

Student: Fedorov Vyacheslav Vasilievich

Name of subject	Academic Hrs.	Grade
Relation database design	20	Passed
Advanced Django: migrations, ORM, API with Django	20	Passed
Introduction to DevOps: Docker and Nginx	10	Passed
Project: Admin panel development for movie a theater	40	Passed
Full-text search with Elasticsearch	20	Passed
ETL architectural patterns	10	Passed
Project: ETL process of data synchronization	30	Passed
Advanced async programming in Python	20	Passed
Capabilities of the Fast API framework and areas of app	10	Passed
Best practices for high-quality code	10	Passed
Project: Business logic implementation using Fast API	40	Passed
Microservice architecture: principles, area of app	10	Passed
Web server security and work with sensitive data	20	Passed
Protocols, OAuth and Identity Management	10	Passed
Project: authorization service for a streaming platform	40	Passed
Architectural design and technology selection	10	Passed
The complexity and distributed storage	20	Passed
Advanced DevOps Course: configuring CI/CD and ELK	10	Passed
Project: service used for collection	40	Passed
Communication system design and mass mailing	10	Passed
Message brokers	10	Passed
Project: notification service	20	Passed
Introduction to team leadership	10	Passed
Introduction to working with clients	10	Passed
Architecture and design: uncertainty and risk management	10	Passed
Graduation project	50	Passed

Certificate of ITMO University

Student: Fedorov Vyacheslav Vasilievich

Name of subject	Academic Hrs.	Grade
I. Semester		
Physics	144	Excellent
History of Western European and Russian Culture	108	Excellent
Mathematical Analysis	108	Good
Linear Algebra	108	Excellent
English	108	Passed
Philosophy	108	Good
Introduction to Digital Culture	108	Passed
Computer and Engineering Graphics	108	Good
Physical Chemistry	108	Excellent
Physical Education	16	Passed
II. Semester		
Physics	144	Excellent
Mathematical Analysis	108	Good
Linear Algebra	108	Excellent
English	88	Passed
Data storage and processing	108	Passed
Introduction to Professional Practice	216	Excellent
Physical Education	16	Passed
	GPA	**4.93/5**

Certificate of Novosibirsk State University

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Name of subject	Academic Hrs.	Grade
I. Semester		
Introduction to Technique of Physical Experiment	70	Excellent
English	88	Excellent
Physical Education	16	Passed
Mechanics and the Theory of Relativity	298	Excellent
Measuring Laboratory Course	106	Excellent
Higher Algebra and Analytic Geometry	158	Excellent
Basics of Mathematical Analysis	266	Excellent
Introduction to Information Technology	70	Passed
II. Semester		
English	88	Good
History of Russia	70	Passed
Physical Education	16	Passed
Molecular Laboratory Course	106	Excellent
Basics of Mathematical Analysis	266	Good
Molecular Physics	194	Excellent
Higher Algebra and Analytic Geometry	158	Excellent
Basics of programming	106	Good
Additional chapters of mathematical analysis	34	Passed
Astrophysical Workshop	16	Passed
The emergence of basic mathematical concepts	16	Excellent
III. Semester		
English	70	Excellent
Complex Variable Theory	138	Excellent
Electromagnetic Workshop	108	Excellent
Physical Education	16	Passed
Programming Laboratory Course	106	Excellent
Differential Equations	120	Excellent
Radio Electronics	106	Passed
Basics of Functional Analysis	138	Excellent
Electricity and Magnetism	242	Excellent
IV. Semester		
Radio Electronics Laboratory Course	70	Excellent
English	70	Good
Physical Education	16	Passed
Laboratory Course of Physical Optics	106	Excellent
Computer Simulation of Physical Phenomena	70	Excellent
Analytical Mechanics	140	Excellent
Electrodynamics and Optics	206	Excellent
Basics of Functional Analysis	138	Excellent
Radio Electronics	106	Excellent
Differential Equations	120	Excellent

Name of subject	Academic Hrs.	Grade
V. Semester		
Astronomy	70	Excellent
Philosophy	70	Excellent
English	70	Good
Vector and tensor analysis	106	Excellent
Engineering Tools of Automation in Scientific Researches	16	Excellent
Cycle accelerators	70	Excellent
Electrical optics and beam physics	68	Excellent
Microwave electrodynamics	110	Good
Methods of Mathematical Physics	140	Excellent
Quantum Mechanics	174	Excellent
Physics of Continuous Medium	140	Excellent
VI. Semester		
Practice in the Institute	26	Passed
Atomic Laboratory Course	108	Excellent
Philosophy	108	Good
Linear accelerators	108	Excellent
	Gpa	**4.84/5**

Certificate of secondary education

The structural subdivision of Novosibirsk State University - Specialized Educational and Scientific Center of the University, Novosibirsk

Student: Fedorov Vyacheslav Vasilievich

Name of subject	Grade
Russian language	Excellent
Literature	Excellent
Mathematics	Excellent
History	Good
Social Studies	Excellent
Physics	Excellent
Chemistry	Excellent
Biology	Excellent
German language	Excellent
Computer science	Excellent
Physical Culture and Life Support	Excellent
Astronomy	Passed
Specialized Course in Mathematics	Passed
Specialized Course in Physics	Passed
Gpa	**4.91/5**