# Oleg Shpynov

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## Summary

Seasoned research engineering leader with strong math background, good communication and teamwork skills. I am leading a group that develops machine learning algorithms and scalable computational bioinformatics pipelines for biological data analysis. Previously I was focused on Integrated Development Environment development from lexical analysis to advanced type systems development and semantic verifications.

## Experience

2013 – today

**Research and Development Team Lead**
*JetBrains Research, Saint-Petersburg, Russia*

Head of research and development bioinformatics group. Group is developing novel algorithms and methods for experimental data analysis, building scalable computational pipelines and tools, and working in collaboration with biologists on various ageing studies.

- Built a team of software developers with expertise in machine learning and bioinformatics
- Lead development of two bioinformatics products: JBR Genome Browser and SPAN Semi-supervised Peak Analyzer
- Developed various open source libraries including Viktor (fast f64 computations for Kotlin), Bioinf-commons (Bioinformatics library in Koltin), big (BigBed/Wig files format support for JVM), npy (Numpy arrays support for JVM)
- Onboarding and mentoring software developers of all levels
- Coordinated research and development activities in collaborations with biologists
- Developed scientific papers search and analyze service PubTrends

Applied technologies: Unix, Java, Kotlin, Swing, Python, Jupyter, Pandas, Matplotlib, Docker, Docker Compose, PostgreSQL, Neo4j, Flask, Celery, Nltk, Pytorch, HTML, CSS, Javascript, React, Bootstrap, Git, GitHub, AWS, Continuous Integration TeamCity

Group website: https://research.jetbrains.org/groups/biolabs
GitHub account: https://github.com/olegs

2014 – today

**Students mentor**
*Computer Science Center, Saint-Petersburg, Russia*
*Higher School of Economics, Saint-Petersburg, Russia*
*Bioinformatics Institute, Saint-Petersburg, Russia*
Mentored various student project in software development and machine learning including two successful Masters dissertations

2017 – 2018

**Visiting Research Scientist**
*Department of Pathology and Immunology, Washington University School of Medicine, St. Louis, MO, USA*

Computational lead in a joint project of Maxim Artyomov Lab at Washington University in St.Louis . Worked on applied machine learning approaches and methods for epigenetic data analysis.

- Built scalable high-performance computational pipelines targeting Portable Batch System
- Analyzed data for various biological experimental
- Created web resource portals for experimental data

Applied technologies: Unix, QSUB, Bash, Snakemake, Java, Kotlin, Python, Jupyter, Pandas, Matplotlib, Pytest, Git, Docker, Continuous Integration TeamCity, HTML, CSS, Javascript, Bootstrap, Word, Excel, Adobe Illustrator

Project website: https://artyomovlab.wustl.edu/aging

2006 – 2013

**Senior software developer**
*JetBrains, Saint-Petersburg, Russia*

Main focus was on the analysis of source code in programming languages, starting from lexical analysis to advanced type system development and source code semantic verifications.

- Developed JetBrains products: flagship tool IntellIJ IDEA, PyCharm
- Created RubyMine Integrated Development Environment for Ruby programming language
- Maintained and developed IdeaVIM plugin (vim emulation plugin, 7+mln downloads)
- Took part in various IntelliJ IDEA plugins development: GitHub integration support, web-markup languages editing capabilities like YAML, SCSS, LESS, etc.
- Participated in a number of conferences on Ruby on Rails as a company representative and a speaker
- Author of various blog posts on Rubymine, IntelliJ IDEA, etc.

Applied technologies: Ruby, Rails, Unix, Java, Concurrency, IDE, Swing, Git, GitHub, Continuous Integration TeamCity

Website: https://www.jetbrains.com/

## Education

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|---|---|
| 2019 | Deep learning nanodegree at Udacity, certificate number: 9GSNRHUA<br>Machine learning, deep learning, models deployment |
| 2016 | Systems Biology Workshop by Bioinformatics Institute, University ITMO and Artyomov Lab of Washington University in St.Louis, Saint-Petersburg, Russia<br>System level data ranging from gene expression, RNA-, ChIP-, and exome-sequencing up to high-throughput metabolomics and network-based data integration. |
| 2015 | Microsoft Machine Learning and Intelligence School, Microsoft, Russia<br>Machine learning, artificial intelligence, statistics. |
| 2011 – 2012 | Saint-Petersburg Academic University — Nanotechnology Research and Education Centre of the Russian Academy of Sciences, Russia<br>Classes of bioinformatics, molecular biology, statistics. |
| 2008 – 2010 | Post graduate student (PhD) in Computer Science, Faculty of Mathematics and Mechanics, Saint-Petersburg State University, Russia |
| 2003 – 2008 | Masters in Computer Science, score 4.8 of 5. Saint-Petersburg State University, Russia<br>Faculty of Mathematics and Mechanics, Department of System Programming |

## Publications

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|---|---|
| 2020 | I. Shchukina, J. Bagaitkar, O. Shpynov et al. ”Epigenetic changes in aging human monocytes”, Nature Aging, *in review*,<br>preprint https://www.biorxiv.org/content/10.1101/2020.05.10.087023v1 |
| 2019 | O. Shpynov, A. Dievskii, P. Tsurinov, et al. ”Bioinformatics Institute 2018/19 project abstracts”, Saint-Petersburg, Russia |
| 2015 | S. Lebedev, R. Chernyatchik, O. Shpynov ”CMeth: a Bayesian semiparametric model for differential methylation analysis”,<br>preprint https://research.jetbrains.org/files/material/5eb189e5911b1.pdf |

## Languages

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|---|---|
| Russian | Native |
| English | Fluent |

## Honors and Awards

Graduated Saint-Petersburg State University cum laude
Participated in ACM regional contests on programming as university team
Winner of Saint-Petersburg state school contests on math, physics, programming

## Interests

Machine learning, software development, Bioinformatics.
Traveling, hiking, snowboarding, diving, cycling, photography.