

Oleg Shpynov

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Summary

Bioinformatics group leader with software development expertise at JetBrains Research. Graduated cum laude from Saint-Petersburg State University in 2008 and received Master degree in Computer Science. Now working on computational algorithms and methods for epigenetic data analysis in the field of human aging with a specific focus on ChIP-seq and ATAC-seq methods under the supervision of Dr. Maxim Artyomov, Washington University of St.Louis.

Research Experience

2016 – today

Bioinformatics Group Leader

JetBrains Research, Munich, Germany

BioLabs 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.

- Data analysis of various biological experimental datasets
- Created novel peak calling solution for ChIP-seq and ATAC-seq data analysis - semi-supervised peak caller SPAN and JBR Genome Browser
- Developed PubTrends - exploratory tool for scientific publications providing faster trends analysis and breakthrough papers discovery
- Participated in development of SnakeCharm - smart editor plugin of Snakemake workflow description language for PyCharm IDE

2017 – 2019

Visiting Research Scientist

*Department of Pathology and Immunology, Washington University,
St. Louis, MO, USA*

Working on applied machine learning approaches and methods for epigenetic data analysis under supervision of Dr. Maxim Artyomov.

- Developed scalable, reproducible computational pipelines for ChIP-seq processing
- Created pipelines for single cell ATAC-seq analysis
- Analyzed of Ultra-Low Input ChIP-seq datasets and single cell ATAC-seq datasets

Teaching Experience

2022	Lecturer <i>Constructor Univeristy, Bremen, Germany</i> <ul style="list-style-type: none">• Course "Algorithmic Bioinformatics" for Bachelor students. The course covers various bioinformatic algorithms actively used in computational and systems biology. Theoretical background is complemented by solving practical problems.
2019 - 2022	Lecturer <i>University ITMO, Saint-Petersburg, Russia</i> <ul style="list-style-type: none">• Course "Computational Analysis of Epigenetic Data" for Master's Students in the "Bioinformatics and Systems Biology" program. The course covers foundations of epigenetic regulation of transcription and computational approaches of ChIP-seq and WGBS data analysis and integration.
2018 – 2020	Speaker <i>Systems Biology Workshop, Saint-Petersburg, Russia</i> <ul style="list-style-type: none">• System level data ranging from gene expression, RNA-, ChIP-, and exome-sequencing up to high-throughput metabolomics and network-based data integration. Joint workshop with Washington University in St.Louis, Dr. Maxim Artyomov.
2014 – 2022	Students Mentor <i>Bioinformatics Institute, Saint-Petersburg, Russia</i> <i>Computer Science Center, Saint-Petersburg, Russia</i> <i>Higher School of Economics, Saint-Petersburg, Russia</i> <ul style="list-style-type: none">• Supervisor of two successful Masters dissertations• Mentorship of various students projects• Seminars

Professional Experience

2006 – 2013	Senior Software Developer <i>JetBrains, Saint-Petersburg, Russia</i> <p>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.</p> <ul style="list-style-type: none">• Developed JetBrains products: flagship tool IntelliJ IDEA, PyCharm• Maintained and developed IdeaVIM plugin (vim emulation plugin, 7+mIn downloads)• Created RubyMine Integrated Development Environment for Ruby programming language and Ruby On Rails technology
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Education

- 2016 Systems Biology Workshop by Bioinformatics Institute, ITMO University and Washington University in St.Louis, Saint-Petersburg, Russia
- 2011 – 2012 Saint-Petersburg Academic University — Nanotechnology Research and Education Centre of the Russian Academy of Sciences, Russia
Introduction to bioinformatics, molecular biology, statistics.
- 2003 – 2008 Masters in Computer Science, 4.9 of 5. Saint-Petersburg State University, Russia
Faculty of Mathematics and Mechanics, Department of System Programming

Publications

- 2021 **Oleg Shpynov**, Aleksei Dievskii, Roman Chernyatchik, Petr Tsurinov, Maxim N Artyomov, "Semi-supervised peak calling with SPAN and JBR genome browser"; Bioinformatics 37 (22), 4235-4237
website <https://artyomovlab.wustl.edu/aging/tools.html>
- 2020 Irina Shchukina, Juhi Bagaitkar, **Oleg Shpynov***, Ekaterina Loginicheva, Sofia Porter, Denis A Mogilenko, Erica Wolin, Patrick Collins, German Demidov, Mykyta Artomov, Konstantin Zaitsev, Sviatoslav Sidorov, Christina Camell, Monika Bambouskova, Laura Arthur, Amanda Swain, Alexandra Panteleeva, Aleksei Dievskii, Evgeny Kurbatsky, Petr Tsurinov, Roman Chernyatchik, Vishwa Deep Dixit, Marko Jovanovic, Sheila A Stewart, Mark J Daly, Sergey Dmitriev, Eugene M Oltz, Maxim N Artyomov, "Enhanced epigenetic profiling of classical human monocytes reveals a specific signature of healthy aging in the DNA methylome"; Nature aging 1 (1), 124-141
website <https://artyomovlab.wustl.edu/aging/>
- 2020 Denis A. Mogilenko, **Oleg Shpynov**, Prabhakar Sairam Andhey, Laura Arthur, Amanda Swain, Ekaterina Esaulova, Simone Brioschi, Irina Shchukina, Martina Kerndl, Monika Bambouskova, Zhangting Yao, Anwesha Laha, Konstantin Zaitsev, Samantha Burdess, Susan Gillfilan, Sheila A. Stewart, Marco Colonna, Maxim N. Artyomov,, "Comprehensive profiling of an aging immune system reveals clonal GZMK+ CD8+ T cells as conserved hallmark of inflammaging"; Immunity, Immunity 54 (1), 99-115. e12
website <https://artyomovlab.wustl.edu/immune-aging/>
- 2020 Anna Nikiforovskaya, Nikolai Kapralov, Anna Vlasova, **Oleg Shpynov**, Aleksei Shpilman, "Automatic generation of reviews of scientific papers"; 2020 19th IEEE International Conference on Machine Learning and Applications
- 2018 Jeremy P. Huynh, Chih-Chung Lin, Jacqueline M. Kimmey, Nicholas N. Jarjour, Elizabeth A. Schwarzkopf, Tara R. Bradstreet, Irina Shchukina, **Oleg Shpynov**, Casey T. Weaver, Reshma Taneja, Maxim N. Artyomov, Brian T. Edelson, Christina L. Stallings, "Bhlhe40 is an essential repressor of IL-10 during Mycobacterium tuberculosis infection"; Journal of Experimental Medicine 2 July 2018; 215 (7): 1823–1838

* - first co-author

Languages

Russian	Native
English	Fluent
Germany	Elementary

Courses

Deep learning nanodegree at Udacity, certificate number: 9GSNRHUA
Machine learning, deep learning, models deployment

Honors and Awards

ACM ICPC regional contests participant in university team
Winner of Saint-Petersburg State school contests on Mathematics, Physics, and Programming

Interests

Bioinformatics, machine learning, software development.
Spending time with family, traveling, snowboarding, photography.