

Artem Pelenitsyn

Curriculum Vitæ

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Occupation

- 2018–present **PhD student**, *Northeastern U.*, Boston, USA, Advisor: **Jan Vitek** (j.vitek@neu.edu)
Summer 2019 **Intern**, *Tweag I/O*, France (remotely; [final report](#))
Fall 2017 **Researcher**, *Programming Research Lab*, Czech Technical University, Prague, Czechia
Spring 2017 **Visiting Research Assistant**, *Programming Research Lab*, Northeastern U., Boston, USA
2010–2017 **Assistant Professor**, *Southern Federal University*, Rostov-na-Donu, Russia
2012–2013 **Software Engineer**, *Angstrom-SFEDU Labs (part-time)*, Rostov-na-Donu, Russia

Education

- 2003–2007 **B.Sc. in Applied Mathematics and Computer Science**, *Southern Federal University*, Rostov-na-Donu, Russia, [link to the transcript](#)
Major: Foundations and Software Engineering for Computer Science
2007–2009 **M.Sc. in Applied Mathematics and Computer Science**, *Southern Federal University*, Rostov-na-Donu, Russia, [link to the transcript](#)
Major: Foundations and Software Engineering for Computer Science
Master thesis
title *BMS-algorithm and its application to decoding*
supervisor Prof. V.M. Deundyak

Research interests

Functional Programming, Mathematics of Programming, Type Systems, Programming languages

List Of Publications

Peer-reviewed International

- Type Stability in Julia: Avoiding Performance Pathologies in JIT Compilation (with J. Belyakova, B. Chung, R. Tate, J. Vitek) // In: Proc. ACM Program. Lang., Vol. 5, Issue OOPSLA, 2021. DOI: 10.1145/3485527 [\[PDF\]](#)
- Julia Subtyping: a Rational Reconstruction (with F. Zappa Nardelli, J. Belyakova, B. Chung, J. Bezanson, J. Vitek) // In: Proc. ACM Program. Lang., Vol. 2, Issue OOPSLA, 2018. DOI: 10.1145/3276483 [\[PDF\]](#)
- Functional Parser of Markdown Language Based on Monad Combining and Monoidal Source Stream Representation (with G.Lukyanov) // In: Itsykson V., Scedrov A., Zakharov V. (eds) Tools and Methods of Program Analysis. TMPA 2017. CCIS, vol 779, pp. 90–101. Springer, Cham. DOI: 10.1007/978-3-319-71734-0_8 [\[PDF\]](#)
- Associated Types and Constraint Propagation for Generic Programming in Scala // “Programming and Computer Software” (english trans. of “Programmirovaniye”), 2015, No 4, pp. 224–230. DOI: 10.1134/S0361768815040064 [\[PDF\]](#).

Drafts

- Fuzzy-Testing A Subtyping Relation // 2018 [\[PDF\]](#)
- Handling Recursion in Generic Programming Using Closed Type Families (with A. Bolotina) // 2018 [\[PDF\]](#)

Russian

- Building parsers with algebraic effects // Proceedings of the First Russian Conference on Programming Languages and Compilers (PLC'17), 2017, pp. 185–190. With G. Lukyanov.
- Pelenitsyn A. Generic and meta- programming approach to design of software implementation of decoder for a class of algebraic geometry codes // "Prikladnaya informatika" (Applied computer science), 2012, No 2(38), pp. 60–70. [\[PDF\]](#), [link to the draft in English](#).
- Pelenitsyn A. On exploiting one metaprogramming technique. Journal of the Ivanovo Mathematical Society, 2011, No. 1(8), pp.79–84. [\[PDF\]](#).
- Deundyak V., Pelenitsyn A. Operator-theoretic approach to Berlekamp–Massey Algorithm, // Izvestia vuzov (Universities' Bulletin), Sev.-Kav. Region (Caucasus Region), Estestvennye Nauki (Sciences), 2011, No. 3. Pp. 11–13. [\[PDF\]](#).
- Mayevskiy A., Pelenitsyn A. Software Implementation of Algebraic-Geometry Codec using Sakata algorithm, // Izvestia Yufu (Southern Federal University Bulletin), Technology Sciences, 2008, No. 8, pp. 196–198. [\[PDF\]](#).

In Conference Transactions (Russian)

- Pelenitsyn A. On Implementation of n-Dimensional BMS-algorithm Using Generic Programming // Transactions of Scientific School of I.B. Simonenko, 2010, pp. 197–203. [\[PDF\]](#) [\(in Russian\)](#).
- Mayevskiy A., Pelenitsyn A. Methodic Supply and IT-infrastructure for Teaching Low-Level Programming // Transactions of Scientific-Methodic Conference "Modern Information Technologies in Education", 2010, pp. 210–212. [\[PDF\]](#) [\(in Russian\)](#).
- Mayevskiy A., Pelenitsyn A. On Software Implementation of Algebraic-Geometry Codec using Sakata algorithm, // Transactions of X International Conference on Information Security and Safety, 2008, pp. 55–57.
- Pelenitsyn A. On Implementation of Decoder for a Class of Algebraic-Geometry Codes on Projective Curves using Sakata algorithm, // Transactions of the Conference "Week of Science" in Southern Federal University, 2008, vol. 1, pp. 55–57. [\[PDF\]](#) [\(in Russian\)](#).
- Bragilevsky V., Mihalkovich S., Pelenitsyn A. Building Web-portal for Information and Education purposes on Computing Department // Transactions of Scientific-Methodic Conference "Modern Information Technologies in Education", 2008, pp. 48–49. [\[PDF\]](#) [\(in Russian\)](#).

Conference Talks: Research

International

- 2021 **ACM SIGPLAN conference on Systems, Programming, Languages, and Applications: Software for Humanity, 2021**, *OOPSLA Research Papers Track Talk "Type Stability in Julia: Avoiding Performance Pathologies in JIT Compilation"*, Chicago, USA, 2021
[Link to the conference page](#) (includes video)
- 2018 **ACM SIGPLAN Symposium on Scala, 2018**, *Student Talk "Julia Subtyping Lessons Scala Could Learn"*, St. Louis, USA, 2018 (co-located with ICFP)
- 2018 **2nd Workshop on Machine Learning Techniques for Programming Languages**, *Talk "Can We Learn Some PL Theory? How To Make Use of a Corpus of Subtype Checks"*, Amsterdam, The Netherlands, 2018 (co-located with ECOOP/ISSTA)

Russian

- 2015 **Scientific Conference "Modern Information Technologies and IT-Education"**, *talk "C++17 Concepts in their relation to C++0x ones"*, Lomonosov Moscow State University, Faculty of Computational Mathematics and Cybernetics

- 2012 **Research and Practice Conference: Free Open Source Software “FOSS Lviv 2012”**, talk “*Software Implementation of Decoder For a Class Of Error-Correcting Codes on Algebraic Curves: Designing on a Basis of Generic Metaprogramming Templates*”, Ivan Franko National University of Lviv, Lviv, Ukraine
- 2008 **Conference “Week of Science” in Southern Federal University**, talk “*On Implementation of Decoder for a Class of Algebraic-Geometry Codes on Projective Curves using Sakata algorithm*”, Rostov-na-Donu, Russia

Seminar Talks

- 2021 **Linear Haskell**, *Boston Computation Club*, Boston, USA (virtually)
[Video](#)
- 2017 **Introduction to Dependent Types in Idris**, *PL Seminar Jr.*, Northeastern University, USA
- 2016 **Functional Visitors**, *Programming Languages and Compilers seminar*, Southern Federal University, Russia
- 2016 **Seminar on Galois Theory**, Southern Federal University, Russia
- 2011 **Minicourse on Galois Theory**, *Algebra seminar*, Southern Federal University, Russia
- 2011 **Talks “Foundations for programming Languages”, “Automata and Formal Languages”**, *seminar for undergraduates “Introduction to Theoretical Computer Science”*, Southern Federal University, Russia
- 2009 **Talk “Higher-Order Computations and Model Checking”**, *Interchair seminar on Computer Science*, Southern Federal University, Russia
- 2009 **Talk “On multi-dimensional version of Berlekamp-Massey algorithm”**, *Seminar on Mathematical Methods in Information Safety and Security*, Southern Federal University, Russia
- 2009 **Talk “Inductive Data Types in Programming”**, *Seminar on Category Theory*, Southern Federal University, Russia
- 2008 **Talk “Spring Framework”**, *Rostov Java User Group*, Computing Center of Southern Federal University, Russia

Conference Talks: Education, Technology, Popular Science

International

- 2014 **Joint International Program For Scientific and Technology Cooperation**, talk “*Computer Science Projects Developed inside (in connection with) Department of Mathematics, Mechanics and Computer Sciences / SFedU*”, Sao Paulo, Rio de Janeiro, Fortaleza, Brasil
- 2015 **Scientific Conference “Modern Information Technologies in Education”**, talk “*Store and publication assignment infrastructure for Moodle LMS*”, Institute for Mathematics, Mechanics and Computer Science in honour of I. I. Vorovich, Rostov-na-Donu, Russia
- 2010 **Scientific-Methodic Conference “Modern Information Technologies in Education”**, talk “*Methodic Supply and IT-infrastructure for Teaching Low-Level Programming*”, Computing Center of Southern Federal University, Rostov-na-Donu, Russia
- 2008 **International Conference on Information Security and Safety**, talk “*Building Web-portal for Information and Education purposes on Computing Department*”, Taganrog, Russia

Teaching Experience

Teaching Assistantship at [Northeastern University](#)

- CS4500: Software Development — 2020 (Spring).
- CS4410/6410: Compilers — 2019 (Fall).

Teaching at [Southern Federal University](#) (in Russian, unless marked otherwise)

- Quantum Computations (lectures in English) — 2016 (Fall).
- Computer Architecture (lectures & labs) — 2013–2016 (Spring).
- Automata and Ciphers (lectures) — 2013–2016 (Fall).

- Programming Basics labs — 2008, 2010–2012, 2014–2016.
- Programming Languages labs — 2008, 2010, 2012–2015 (Fall).
- Functional Programming labs — 2011 (Spring).
- Automata and Languages — 2010 (Spring).
- Microprogramming/Assembler Programming labs — 2009 (Fall).
- Geometry and Algebra — 2009 (Fall).

Supervising Students at Southern Federal University

- *Structuring Effectful Computations* — MSc G. Lukyanov, 2017, [\[PDF\]](#)
- *Generic Programming and Zippers* — A. Bolotina, 2017
- *Generation of algebraic data types descriptions based on JSON data via Template Haskell* — BSc O. Maroseev, 2016
- *Generation of type class instances based on instances of superclasses via GHC API* — BSc O. Filippskaya, 2016
- *Functional parser for Markdown using monad combination and monoidal representation of input* — BSc G. Lukianov, 2015
- *Deduction system for linear logic in Haskell* — BSc V. Pankov, 2015

Summer Schools and Workshops

- 2018 **Programming Languages Mentoring Workshop @ ICFP**, St. Louis, USA, September 23rd 2018
- 2017 **Oregon Programming Languages Summer School**, *Univeristy of Oregon*, Eugene, USA, June 26th to July 8th 2017
- 2015 **Summer School on Generic and Effectful Programming**, *Department of Computer Science, Univeristy of Oxford*, St Anne's College, Oxford, 6th to 10th July 2015
- 2011 **Summer School “Algebra and Geometry”**, *Laboratory of Algebraic Geometry in the National Research University Higher School of Economics, Teachers' Training University of Yaroslavl'*, Yaroslavl', Russia
- 2010 **Microsoft Algorithms and Data Structures Summer School**, *Microsoft Research in Silicon Valey*, Saint-Petersburg, Russia
- 2010 **Winter School on Applied Mathematics and Computer Science**, *National Research University Higher School of Economics*, Moscow province, Russia
- 2009 **Marktoberdorf Summer School “Logics and Languages for Reliability and Security”**, Marktoberdorf, Germany

Community Service

Academic Conference Organization

- [ICFP '22](#) Artifact Evaluation Committee
- [ETAPS '19](#) Web Co-Chair
- [ML4PL '18](#) Organizer
- [PLC '17](#) Organizer
- ECOOP '18, Student Volunteer
- SPLASH '18,
- ICFP '20, '21

Book Translations (English to Russian)

- Dowek, Gilles, Levy, Jean-Jacques. Introduction to the Theory of Programming Languages. / Springer. 2011. Russian translation together with V. Bragilevsky. Published by DMK Press in 2013. [Link to web page](#), [link to GoogleBooks preview](#).
- Bird, Richard. Pearls of Functional Algorithm Design. / Cambridge University Press. 2010. Russian translation together with V. Bragilevsky. Published by DMK Press in 2013. [Link to web page](#), [link to GoogleBooks preview](#).

Open Source Software Contributions

- [GHC](#) The Glasgow Haskell Compiler ([10+ commits](#))
— contributor
- [BNFC-meta](#) Embedding BNF grammars into Haskell source via Template Haskell
— maintainer
- [Monads.jl](#) Monadic do-notation for the Julia programming language
— maintainer

Pet Projects

- [covid-19-in-russia](#) Updating the Wikipedia table showing dynamics of COVID-19 in Russia by region / Julia, 2020
- [tiger-test](#) The v2 of check-test (see below) developed at NEU / Haskell, 2019
- [subtype-fuzzer](#) A fuzzer to test a tricky subtype relation as found in the Julia programming language / Haskell, 2018
- [chek-test](#) Remove groove from checking students' submissions / Haskell, 2016
- [cpp-mv-poly](#) C++-implementation of multivariate polynomials and the BMS-algorithm massively using C++ templates
- [mmcs-entrance](#) Generation of entrance diagrams (in PNG) in MMCS/SFedU from oficial data (XLS) / Java, 2010
- [lj-comments-notifier](#) Notifications about new comments in some livejournal.com-based blog / Haskell, 2011
- [Project Euler](#) Link to the participant record / Haskell (mostly), C++
- [Me @ GitHub](#) ulysses4ever

Computer skills

- Programming languages Proficient: Haskell, Julia; Experienced: C++, Java, C, Pascal; Familiar: Scala, C#
- Markup, Scripting **L^AT_EX**, HTML, CSS, JavaScript, PHP, bash, Regular expressions
- Environment Git, Make, Nix, Emacs, Wiki/Markdown
- Operating systems **GNU/Linux family**, Windows family

Awards, Scholarships, etc.

- 2012 **Participation in all-russian final of international student olympiad "IT-planet"**, competition: "Oracle Java Olympic"

- 2012 **Diploma for taking second place in regional stage of international student olympiad "IT-planet"**, competition: "Oracle Java Olympic"
- 2012 **Participation in the final stage of VI Open Programming Contest of Southern Federal University**, individual event
- 2011 **Scholarship from foundation "Education and Science on the South of Russia"**
- 2011 **Rector's commendation for participating in international accreditation of university teaching programmes**, *Southern Federal University*
- 2008 **Diploma for the best talk**, *student session during annual "Week of Science", Southern Federal University*

Personal Info

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| Gender | Male |
| Pronouns | He/His/him |
| Marital status | Married to Julia Belyakova |
| Current place of living | Boston, USA |
| Citizenship, Homeland | Russia |
| Name spelling | To reflect the reality, my first name transliteration should be, in fact, something like Artyom. Also, there is no 'ch' sound after the 'r' sound — just 't'. |
| Languages | Russian: Native; English: Advanced (IELTS exam band score 7.5 taken in 2012) |
| Non-technical Interests | |
| Classical literature | Homer, Goethe, Joyce, Kafka, Camus, Sartr, Brodsky |
| Art cinema | Bergman, Fellini, Truffaut, Tarkovsky, Wenders, Kitano, von Trier |