Curriculum vitae: Nikolay Shilov (as June 2025)

Research interests and profile

- My research interests include programming theory and applied logic (in the tradition founded by Andrey P. Ershov and Boris A. Trakhtenbrot).
- My current research interests include the mathematical foundations of formal methods and their applications to analysis of program, information, distributed, and multi-agent systems.

Teaching experience

- My teaching experience spans more than 32 years (including 7 years abroad). Over these years, I have taught courses (at both undergraduate and graduate levels) in mathematical analysis, probability theory, ordinary differential equations, the mathematical foundations of digital signal processing, game theory, algorithm analysis and design, programming fundamentals and web programming, programming theory, program compilation and verification, discrete mathematics, and mathematical and applied logic.
- I am very interested in programming and mathematics contests for school and university students. Specifically, I participated in organizing, conducting, judging, and training participants in such competitions at Novosibirsk State University and Innopolis University. I am the organizer of the VeHa, an all-Russian Verification Hackathon (with international participation), on program formal specification and verification.
- I have positive experience supervising master's and doctoral theses. I am passionate about popularizing programming theory and mathematical logic among schoolchildren and undergraduate students, and I publish popular science articles in popular science journals (for example, Russian journal "Potential").
- I have experience working in different higher education systems, having taught at universities in Australia, the UK, New Zealand, South Korea, Kazakhstan and Russia.

Degrees and titles

- Ph.D. – Candidate of Physical and Mathematical Sciences (1987)
- Senior Researcher at the Russian Academy of Sciences (1997)

Homepage and contact information

- http://persons.iis.nsk.su/en/shilov (not very much up to date)

- Phone +7 913 727 04 38
- E-mail shiloviis@mail.ru
- Home address: 630060, Novosibirsk, Zelenaya Gorka St., Bldg. 6, Apt. 1

Education

- 1978 – Graduated Novosibirsk Physics & Mathematics School (http://sesc.nsu.ru/main/index.php)
- 1983 – Graduated Mathematics and Mechanics Department of Novosibirsk State University (nsu.ru). Qualification upon graduation: Master's in mathematics, Applied Mathematics, and Programming with specialization in applied logic and Computer Science. Ms. Thesis' title: *Non-deterministic Program Schemata and their utility for logics of programs*.
- 1987 – Ph.D. in Computer Science, Institute of Computational Mathematics and Mathematical Geophysics of Siberian Branch of the Russian Academy of Sciences (icmmg.nsc.ru, former Novosibirsk Computing Center of Soviet Academy of Science). Ph.D. Thesis' title: *Program Logics and their Applications*.

Positions in Russia

- 2025 – present: Olympiad Mathematics teacher at Lyceum No. 22 "Hope of Siberia" and Secondary Comprehensive School No. 102 (Novosibirsk)
- 2016–2025: Associate Professor of the Laboratory of Programming Languages and Compilers and Head of the Software Engineering Laboratory at Innopolis University (Tatarstan)
- 1997–2016: Senior Researcher at Institute of Informatics Systems of Russian Academy of Science (IIS), Laboratory of Theoretical Programming
- 2012–2013: Visiting Professor, Samsung Electronics Global Faculty program, Samsung Advanced Technology Training Institute
- 1992–2012: Part-time Associate Professor at Novosibirsk State University (NSU), Mathematics and Mechanics Department, Mathematics and Mechanics Department, School of Programming
- 2006–2013: Part-time Associate Professor at Novosibirsk State Technical University, Department of Applied Mathematics, School of High-Performance Computing

International experience and collaboration

I have research and teaching experience in Australia, New Zealand, South Korea, Kazakhstan, and Germany:

- 1998-1999: Visiting Lecturer at School of Computing Science (now Department of Software Engineering), Faculty of Mathematical and Computing Science of University of Technology, Sydney

- 2000-2001 and 2005: visiting Research Professor (2000-2001) and Visiting Associate Professor (2005) at Computer Science Department, Korean Advanced Institute of Science and Technology (KAIST)
- 2003: Visiting Associate Professor and Erskine Fellow at Department of Computer Science, University of Canterbury, New Zealand
- 2006-2008: Russian-German joint research project “Conceptual and Model Theoretic Structures for Knowledge Processing” funded by Russian Foundation of Basic Research and Deutsche Forschung-sgemein-schaft (German Research Foundation)
- 2007: Visiting Distinguish Professor at School of Computer Science and Engineering, Chung-Ang University, Seoul, Korea
- 2011: DAAD Research Fellowship (Dresden Technical University)
- 2012-2013: Visiting Professor, Samsung Electronics Global Faculty program, Samsung Advanced Technology Training Institute
- 2013-2015: Visiting Associate Professor of Computer Science Department, School of Science and Technology, Nazarbayev University, Astana, Kazakhstan
- 2025: CS Professor of Heriot-Watt University, Aktobe Campus, Kazakhstan

Scientific awards and fellowships

2003 – Erskine Fellow

2011 – DAAD Fellowship

H indexes

- Google Scholar: h-index = 13/5 (total/since 2020)
- Research Gate h-index =11
- Russian Citation Index (SPIN ID: 9856-2620) = 10/5/8/6 (all RCI/kernel RCI/excluding self-citations/journals only)
- Scopus (Author ID: 57211877255, ORCID Author ID: 0000-0001-7515-9647) h-index = 6
- Web of Science (ResearcherID: F-9116-2012) h-index = 4

List of scientific publications (ResearcherID, Research gate, etc.)

- Research Gate: https://www.researchgate.net/profile/Nikolay_Shilov3
- Google Scholar: https://scholar.google.ru/citations?user=kEHqrCcAAAAJ&hl=en
- DBLP entry: https://dblp.uni-trier.de/pid/35/1694.html
- Russian Citation Index: https://elibrary.ru/author_items.asp?authorid=5208

Total number of scientific publications

- Google Scholar: 139
- DBLP: 47
- Research Gate: 94

- SCOPUS: 40
- Web of Science: 22
- Russian Citation Index: 155

Service to Academy (permanent & selected since 2019)

- Member of the Program Committee of ECAI 2020, the 24th European Conference on Artificial Intelligence, June 10-12, 2020, Santiago de Compostela, Spain (http://ecai2020.eu/)
- Member of the Program Committee of FM 2019, the 23rd international symposium in a series organized by Formal Methods Europe (FME), October 7-11, 2019, Porto, Portugal (http://formalmethods2019.inesctec.pt).
- Since 2012: Member of the Program Committee of SYRCoSE (Spring/Summer Young Researchers' Colloquium on Software Engineering, http://syrcose.ispras.ru).
- Since 2009: Member of the Program Committee of International workshops Program Semantics, Specification & Verification: Theory and Application (PSSV); since 2016 – Organizing Chair; since 2017 – Program Committee Co-Chair (https://persons.iis.nsk.su/en/PSSV-2024)
- Since 2020: Organizer and chair of online Russian research seminar STEP (Software Engineering, Theory and Experimental Programming https://persons.iis.nsk.su/en/STEP-2024)
- Since 2023: Organizer of VeHa, an all-Russian Verification Hackathon (with international participation), on program formal specification and verification

Selected Invited Contributions

- Invited talk *Recursion Elimination: From Olympiad Problems to Program Optimization* (Discrete and Continuous Signals: Analysis, Information, and Applications, December 11-16, 2023, St. Petersburg State University)
- Invited talk *Well-Structured Labeled Transition Systems: Their Relation to Models of Intuitionistic Modal Logics and to Supercompilation (Program Loop Detection)* (Joint Meeting on the Refal Language, Bauman Moscow State Technical University and the A.K. Ailamazyan Institute of Software Engineering, Russian Academy of Sciences, June 17, 2023)
- Invited talk *Recursion Elimination in Semi-Interpreted Program Schemes* at the All-Russian Scientific Conference "Mathematical Foundations of Computer Science, Information, and Communication Systems" (MFCSICS-2021, Tver, Russia, December 3-8, 2021)
- Invited course *Introduction to Formal Program Semantics* at Summer School of Computer Science Summer in Russia (CSSR-2019, June 24 – July 5, 2019, Novosibirsk, Russia).
- Invited talk *Agent Knowledge and Belief in Distributed Systems* at SYRCoSE-2015 (Spring/Summer Young Researchers' Colloquium on Software Engineering) (May 28-30, 2015, Samara, Russia)
- Invited talk *Agent Knowledge and Beliefs in a Cloud* at Kazakh-British Workshop Embracing Global Computing in emerging economies (26-28

February 2015, Almaty)
- Invited tutorial *Multiagent Systems in Social Software* at autumn school CSEDays: Application 2011 (November 24-27, 2011, Ekaterinburg, Russia)
- Invited tutorial *What Programmers should know about Program Logics* at autumn school CSEDays: Application 2010 (November 12-14, 2010, Ekaterinburg, Russia)

Selected publications

The most important publications

1. Shilov N.V., Shilova S.O., Bernstain A.Yu. *Program Schemata Technique for Propositional Program Logics: A 30-Year History*. Programming and Computer Software, v.42, n.4, 2016, p. 239–256. Available at https://link.springer.com/article/10.1134/S036176881604006X
2. Shilov N.V. and Garanina N.O. Knowledge-based Algorithms for BDI-agents. Automatic Control and Computer Sciences, 2021, v.55, n.7, p. 786–794. Available at https://link.springer.com/article/10.3103%2FS0146411621070129.

Monography

3. Shilov N.V. Foundations of Program Syntax, Semantics, Translation, and Verification: A Tutorial. Novosibirsk State University. Novosibirsk, 2011. 292 p. (in Russian)

Several representative publications (over 6 years)

4. Shilov N.V., Anureev I.S., Bodin E.V., Kondratev D.A., Promsky A.V. Platform-independent specification and verification of the standard mathematical square root functions. Automatic Control and Computer Sciences, 2019, v.53, n.7, pp. 595–616.
5. Staroletov S., Shilov N. Applying Model Checking Approach with Floating Point Arithmetic for Verification of Air Collision Avoidance Maneuver Hybrid Model. In: Model Checking Software. SPIN 2019. Lecture Notes in Computer Science, v.11636, p. 193-207.
6. Shilov N.V. and Danko D. Teaching Efficient Recursive Programming and Recursion Elimination Using Olympiads and Contests Problems. Proceedings of the workshop on Frontiers in Software Engineering Education (FISEE-2019), Lecture Notes in Computer Science, v.12271, Springer, 2020. p. 246-264.
7. Kondratyev D.A., Staroletov S.M., Shoshmina I.V., Krasnenkova A.V., Ziborov K.V., Shilov N.V., Garanina N.O., Cherganov T.Y. VeHa 2024 Formal Verification Contest: Two Years of Experience and Prospects. Trudy ISP RAN/Proc. ISP RAS, vol 37, issue. 1, 2025., pp. 159 - 184.

Principal Investigator in projects with external funding

- Funding organization: Russian Basic Research Foundation

- Type of the competition and duration: Initiative Research, 2017-2019
- Title: Platform-independent approach to formal specification and verification of standard mathematical functions
- Status of the project: completed

- Funding organization: Russian Basic Research Foundation
- Type of the competition and duration: Initiative Research, 2013-2016
- Title: Research on Program Schemata Technique for propositional program logics
- Status of the project: completed

Personal information

- Born April 24, 1961, in the village of Bolotnoye, Novosibirsk Oblast, to a family of teachers.
- Married to Svetlana O. Shilova (previously Shishmareva) since 1991, we have six children (four sons and two daughters).
- All children are adults; the sons work in Russia, and the daughters are students at Russian universities. Four children have their own families.
- Permanent residence address: 630060, Novosibirsk, Zelenaya Gorka St., Bldg. 6, Apt. 1.

Written by Nikolay V. Shilov

January 2026