Igor KONNOV

Vienna, Austria
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Born in 1981. Married, with one child. Citizen of Russia, permanent resident of Austria
Languages: English (fluent), German (ÖSD Zertifikat B2), Russian (mother tongue), French (beginner)
Research interests: model checking, parameterized verification, verification of distributed algorithms, fault tolerance, blockchains, temporal logic of actions (TLA$^+$)

Appointments

Interchain Foundation, Vienna, Austria:

Oct 2019 – present. Senior Research Scientist

INRIA Nancy — Grand Est, Nancy, France:

Mar 2018 – Sep 2019 (leave of absence). Researcher (permanent, chargé de recherche de classe normale)

Vienna University of Technology (TU Wien), Faculty of Informatics, Austria:

Jan 2016 – Feb 2018. Postdoctoral researcher, principal investigator in the WWTF project APALACHE

Dec 2011 – Dec 2015. Postdoctoral assistant professor (Universitätsassistent, limited contract)

Jul 2011 – Dec 2011. Postdoctoral researcher (Projektassistent)

Moscow State University (MSU), Faculty of Computational Mathematics and Cybernetics, Russia:

Jan 2010 – Jun 2011. Junior research fellow (m.n.s.)

Dec 2006 – Jan 2010. Pre- and postdoctoral research and teaching assistant

Sytech LLC, Russia: **2006–2010,** Part-time systems architect, **2004–2006,** Software developer

IFirst LLC, Russia: **01.09.2002–15.09.2003,** Part-time programmer

Higher education and degrees

Oct 2003– Nov 2008. Moscow State University, Russia: Ph.D. in Computer Science (awarded in **Feb 2009**)

Sep 1998– Jul 2003. Moscow State University, Russia: Specialist (approx. MSc) in Applied Math. & Informatics

With distinction, 97% are the best score: avg. score 1.06 (German scale) = avg. score 4.87 (Russian scale)

Project acquisition and participation

2016–2019. WWTF: Vienna Science and Technology Fund. Project ICT15–103 APALACHE **539k€**
Abstraction-based Parameterized TLA Checker TU Wien
Role: principal investigator, **with**: J.Widder (co-PI), H. Veith (core team)
Acceptance rate: 10 out of 137 proposals (approx. 7%)

2015–2018. FWF: Austrian National Research Network S11403-N23 SHiNE
Systematic Methods in Systems Engineering TU Wien
Role: researcher, **Coordinator**: R. Bloem (**3.7 Mio.** €), **PI**: H. Veith **625k** €

2011–2014. WWTF: Vienna Science and Technology Fund. Project PROSEED **598k** €
Proof Seeding for Software Verification TU Wien
Role: researcher, **PI**: H. Veith

2010–2014. FWF: Austrian National Research Network S11403-N23 RiSE
Rigorous Systems Engineering TU Wien
Role: researcher, **Coordinator**: R. Bloem (**3.7 Mio.** €), **PI**: H. Veith **582.8k** €

2010–2012. Russian Federal Special-Purpose Programme, Project 14.740.11.0399 approx. **200k** €
Developing a Prototype for Computer Simulation of Real-Time Distributed Systems MSU
Role: responsible for coordination, research agenda, and report writing, **PI**: R.L. Smeliansky

2009–2011. RFBR: Russian Fund for Basic Research, Project Nr. 09–01–00277-a approx. **32k** €
Structural and Semantic Analisys Using Formal Models of Sequential and Parallel Processes MSU
Role: researcher, **PI**: R.I. Podlovchenko

2006–2009. INTAS: EU research cooperation with the New Independent States, Project Nr. 05–1000008–8144
Practical Formal Verification Using Automated Reasoning and Model Checking MSU
Role: researcher, **Coordinator**: T. Jebelian, **PI**: V.E. Plisko

2006–2008. RFBR: Russian Fund for Basic Research, Project Nr. 06–01–00106-a approx. **52k** €
Formal Models of Sequential and Parallel Processes and the Analysis of Their Semantic Properties MSU
Role: researcher, **PI**: R.I. Podlovchenko

R&D projects with industry and state companies

2009–2010. *Obfuscation techniques on intermediate code representation* Computer Systems Lab/MSU
Role: team lead of 1 master student and 1 PhD student, **PI:** R.L. Smeliansky

2007–2008. *Obfuscation techniques for C++* Computer Systems Lab/MSU
Role: team lead of 1 master student and 1 PhD student, **PI:** R.L. Smeliansky

2008. *Teachable static analysis workbench* The Open Web Application Security Project (OWASP)
Role: developer, **PI:** D.D. Kozlov

2007–2008. *Static analysis of python web applications for vulnerabilities* Computer Systems Lab/MSU
Role: developer, **PI:** R.L. Smeliansky

Selected invited talks & lectures

Dagstuhl Seminar 18211: "Formal Methods and Fault-Tolerant Distributed Computing: Forging an Alliance"
Dagstuhl/Germany, invited tutorial *What my computer can find about your distributed algorithm* **May 2018**

Bertrand Meyer's Vericlub seminar, U. Toulouse, Toulouse/France **Nov 2016**
invited seminar talk *Model checking of threshold-guarded distributed algorithms: beyond reachability*

Rigorous System Design Laboratory, EPFL, Lausanne/Switzerland **Sep 2016**
invited seminar talk *Model checking of fault-tolerant distributed algorithms: safety and liveness*

Workshop on Program Semantics, Specification & Verification at CSR'16, St. Petersburg/Russia **Jun 2016**
invited talk *Model checking of threshold-based fault-tolerant distributed algorithms*

Spring School Logic & Verification, Vienna/Austria **Apr 2016**
lectures on *Complete parameterized & bounded model checking of threshold-based fault-tolerant distributed algorithms*

Amazon, Herndon, VA/USA **Jun 2015**
invited talk *Model checking of threshold-based fault-tolerant distributed algorithms*

Dagstuhl Seminar: "Distributed Cloud Computing", Dagstuhl/Germany **Feb 2015**
talk *Model checking of threshold-based fault-tolerant distributed algorithms*

Tools & Methods of Program Analysis'14, Kostroma/Russia **Nov 2014**
invited talk *Parameterized model checking of fault-tolerant distributed algorithms by abstraction*

Summer School'14: "Verification Technology, Systems & Applications", Luxembourg **Oct 2014**
lectures on *Model checking of fault-tolerant distributed algorithms* (together with Helmut Veith)

Dagstuhl Seminar: "Formal Verification of Distributed Algorithms", Dagstuhl/Germany **Apr 2013**
invited talk *Counter attack on Byzantine generals*

Concurrency Seminar, Computing Laboratory, Oxford/UK **Feb 2011**
invited talk *An invariant-based approach to the verification of asynchronous parameterized networks*

Teaching experience

Vienna University of Technology (TU Wien)

2013–2017. Computer Aided Verification Master students, compulsory, lectures & practicals, 3 ECTS
In 2017, held the lecture course. Until 2017, read parts of the lecture course, teaching assistance.

2013–2017. Program & Systems Verification Bachelor students, compulsory, lectures & practicals, 6 ECTS
Teaching assistance

2011–2015. Formal Methods of Informatics Master students, compulsory, lectures & practicals, 6 ECTS
Teaching assistance

Moscow State University (MSU)

2008–2010. Software model checking (Dr. Savenkov) 8th semester, compulsory, lectures & seminars, 32 hrs.
Designed the course together with K. Savenkov, read parts of the lecture course, teaching assistance

2004. Seminars on The C Programming Language and UNIX 3rd semester, compulsory, 32 hrs.
Instructed at all seminars (approx. 20 students)

2005. Seminars on Syntax Analysis and C++ 4th semester, compulsory, 32 hrs.
Instructed at all seminars (approx. 20 students)

2004. Operating Systems (Prof. Terekhov) 3rd semester, compulsory, lectures, 54 hrs.
Teaching assistance

2003–2011. Computer Networks (Prof. Smeliansky) 6th semester, compulsory, lectures, 64 hrs.
Teaching assistance

2003–2004. The Java Programming Language optional, lectures, 32 hrs.
Read parts of the lecture course, teaching assistance

2003–2004. MSU *math entrance exams* compulsory
Corrected written math exams, participated in the oral math exams

Kazakhstan branch of Moscow State Univ., Astana/Kazakhstan

2011. Software model checking 8th semester, compulsory, lectures & seminars, 32 hrs.
held the lecture course and the seminars

Tashkent University, Tashkent/Uzbekistan

2011–2013. Participated in EU project CANDI: Teaching Competency & Infrastructure for e-Learning and Retraining

Advising

PhD students (TU Wien): Associated Faculty of Doctoral College LogiCS [`logic-cs.at`]

2016–present. Thanh Hai Tran (advising) with Priv.-Doz. Dr. Josef Widder

2016–present. Jure Kukovec (advising) with Priv.-Doz. Dr. Josef Widder

2015–2019. Frau Dr. Marijana Lazić (co-advising) with Priv.-Doz. Dr. Josef Widder
Reduction techniques for parameterized model checking and synthesis of fault-tolerant distributed algorithms

2011–2014. Frau Dr. Annu Gmeiner (informal co-advising) advisors: Prof. Helmut Veith and PD. Dr. Josef Widder
Parameterized model checking of fault-tolerant distributed algorithms

Master students:

2019. Viktor Sergeev (Univ. of Lorraine)
Bounded Model Checking of Liveness Properties of TLA+ Specifications co-advised with Stephan Merz

2016. Jure Kukovec (Univ. Ljubljana)
Extensions of Threshold Automata for Reachability in Parameterized Systems co-advised with Prof. Andrej Bauer

2015–2016. Thanh Hai Tran (TU Wien)
User-guided Predicate Abstraction of TLA+ Specifications co-advised with Prof. Helmut Veith

2009–2011. Alexander Mischenko (MSU)
Static Type Analysis of Python Programs on Bytecode Level

2007–2009. Denis Sigaev (MSU)
Detection of Programs Protected from Reverse Engineering co-advised with A. Kachalin

2008. Alexey Schevchenko (MSU)
Application of Regular Model Checking to Infinite State Systems

2007. Peter Bulychev (MSU)
Game-Theoretic Methods of Protocol Verification co-advised with Prof. Vladimir Zakharov

Bachelor students:

2013. Sebastian Neumaier (TU Wien) *A Simple Simulation Language for Distributed Algorithms*

2011. Andrey Babak and Anton Artyomov (MSU) *Static Analysis of Python Programs*

Community service

Conference organization:

PC co-chair of CONCUR 2020 in Vienna	[concur2020.forsyte.at]
Artifact evaluation chair: Computer-Aided Verification (CAV'18)	[cavconference.org/2018]
Workshop chair: Computer-Aided Verification (CAV'13)	[cav2013.forsyte.at]

Program Committees:

ACM Symposium on Principles of Distributed Computing (PODC'18)	London/UK
Formal Methods in Computer-Aided Design (FMCAD) 2017 & 2018	Vienna/Austria & Austin/TX, US
Computer Aided Verification'16 (External Reviewer Committee)	Toronto/Canada
Symbolic and Numeric Algorithms for Scientific Computing 2013, 2016, and 2017	Timisoara/Romania
Stabilization, Safety, and Security of Distributed Systems'15	Edmonton/Canada
Intl. Conf. on Verification & Evaluation of Computer & Comm. Systems (VECoS'18)	Grenoble/France
Intl. Symposium on Formal Approaches to Parallel and Distributed Systems (4PAD) 2018 & 2019	Orléans/France & Dublin/Ireland
Workshop on Methods and Tools for Rigorous System Design (MeTRiD'18)	Thessaloniki/Greece
Tools & Methods of Program Analysis 2015 & 2017	St. Petersburg & Moscow/Russia
Workshop on Program Semantics, Specification, and Verification 2017–2019	Russia
Parallel, Distributed, and Network-based Processing'17 (Formal approaches track)	St. Petersburg/Russia

Journal and book chapter reviews: FMSD (2018), Computing (2018), LMCS (2017), ACM ToCL (2017), MAIS (2017), MiCS (2017), TIME (2015),
Handbook of Model Checking (eds. E. Clarke, T. Henzinger, H. Veith)

Guest editor: Special issue on Computer Aided Verification'13 in Formal Methods in System Design (Springer) (with Helmut Veith and Natasha Sharygina)

Editorial board: Proceedings of the Institute for System Programming of the Russian Academy of Sciences since 2016 [`www.ispras.ru/en/proceedings`]

External reviewer: FSTTCS'17, QEST'17, TACAS'17, STACS'17, VMCAI'17, MARS'17, ICFEM'16, CONCUR'16, IJCAR'16, LICS'16, EuroPar'16, AAMAS'16, CAV'15, FMCAD'15, TACAS'15, FoSSaCS'15, CAV'14, SAS'14, GandALF'14, ESOP'14, HVC'14, CAV'13, LATA'13, SSS'13, CAV'12, NFM'12, SPIN'12, VMCAI'12, FMICS'11, CSL'11

Student Award Committee. VCLA International Student Awards 2014–2015

Tools

2016–present. Apalache: symbolic model checker for TLA$^+$ [`forsyte.at/software/apalache`]

2012–present. ByMC: model checker of parameterized fault-tolerant distributed algorithms [`forsyte.at/software/bymc`]

2004–2009. CheAPS: model checker of parameterized asynchronous distributed systems [`lvk.cs.msu.su/~konnov/cheaps`]

Scholarships & sponsored summer schools

2009–2010. Fellowship for young researchers: Faculty of Computational Mathematics and Cybernetics, MSU

2009. Marktoberdorf Summer School *Engineering Methods and Tools for Software Safety and Security*

2008. Marktoberdorf Summer School *Logics and Languages for Reliability and Security*

2005. Microsoft Summer School *Mathematics and Programming: from Theory Towards Practice*

2003–2005. PhD student scholarship: LSI Logic

Publications and talks

Book

[1] R. Bloem, S. Jacobs, A. Khalimov, I. Konnov, S. Rubin, H. Veith, and J. Widder. *Decidability of Parameterized Verification*. Vol. 6. 1. Morgan & Claypool, 2015, pp. 1–170. DOI: 10.2200/S00658ED1V01Y201508DCT013.

Book chapter

[2] A. Gmeiner, I. Konnov, U. Schmid, H. Veith, and J. Widder. "Tutorial on Parameterized Model Checking of Fault-Tolerant Distributed Algorithms". In: *Formal Methods for Executable Software Models*. LNCS. Springer, 2014, pp. 122–171. DOI: 10.1007/978-3-319-07317-0_4.

Invited paper

[3] I. Konnov, H. Veith, and J. Widder. "What You Always Wanted to Know About Model Checking of Fault-Tolerant Distributed Algorithms". In: *Perspectives of System Informatics: PSI 2015, in Memory of Helmut Veith, Revised Selected Papers*. Springer, 2016, pp. 6–21. DOI: 10.1007/978-3-319-41579-6_2.

Journal articles

[4] I. Konnov, J. Kukovec, and T.-H. Tran. "TLA+ Model Checking Made Symbolic". In: *Proc. ACM Program. Lang OOPSLA 2019 (PACMPL)* 3 (2019). accepted for publication. URL: https://forsyte.at/wp-content/uploads/kkt-oopsla19.pdf.

[5] I. V. Konnov, H. Veith, and J. Widder. "On the completeness of bounded model checking for threshold-based distributed algorithms: Reachability". In: *Information and Computation* 252 (2017). **(Extended version of the conference paper** I. Konnov, H. Veith, J. Widder. "On the Completeness of Bounded Model Checking for Threshold-Based Distributed Algorithms: Reachability". In Concurrency Theory – 25th International Conference, CONCUR, 2014, pp. 125–140**)**, pp. 95–109. DOI: 10.1016/j.ic.2016.03.006.

[6] I. Konnov, M. Lazic, H. Veith, and J. Widder. "Para^2: Parameterized Path Reduction, Acceleration, and SMT for Reachability in Threshold-Guarded Distributed Algorithms". In: *Formal Methods in System Design* (2017). **(Extended version of the conference paper** I. Konnov, H. Veith, J. Widder. "SMT and POR Beat Counter Abstraction: Parameterized Model Checking of Threshold-Based Distributed Algorithms". In Computer-Aided Verification, vol. 9206, LNCS, 2015, pp. 85–102.**)** DOI: 10.1007/s10703-017-0297-4. URL: https://link.springer.com/article/10.1007/s10703-017-0297-4.

[7] R. Bloem, S. Jacobs, A. Khalimov, I. Konnov, S. Rubin, H. Veith, and J. Widder. "Decidability in Parameterized Verification". In: *ACM SIGACT News* 47.2 (2016), pp. 53–64. DOI: 10.1145/2951860.2951873.

[8] D. Y. Volkanov, V. A. Zakharov, D. A. Zorin, V. V. Podymov, and I. V. Konnov. "A combined toolset for the verification of real-time distributed systems". In: *Programming and Computer Software* 41.6 (2015), pp. 325–335. DOI: 10.1134/S0361768815060080.

[9] I. Konnov, V. Podymov, D. Volkanov, V. Zakharov, and D. Zorin. "How to Make a Simple Tool for Verification of Real-Time Systems". In: *Automatic Control and Computer Sciences* 48.7 (2014), pp. 534–542. DOI: 10.3103/S0146411614070232.

[10] I. V. Konnov. "On application of weaker simulations to parameterized model checking by network invariants technique". In: *Automatic Control and Computer Sciences* 44.7 (2010), pp. 378–386. DOI: 10.3103/S0146411610070035.

[11] I. V. Konnov and V. A. Zakharov. "An invariant-based approach to the verification of asynchronous parameterized networks". In: *Journal of Symbolic Computation* 45.11 (2010), pp. 1144–1162. DOI: 10.1016/j.jsc.2008.11.006.

[12] I. V. Konnov and V. A. Zakharov. "Using Adaptive Symmetry Reduction for LTL Model Checking". In Russian. In: *Modelling and Analysis of Information Systems* 17.4 (2010), pp. 78–87. URL: http://www.mathnet.ru/php/archive.phtml?wshow=paper&jrnid=mais&paperid=38&option_lang=eng.

[13] I. V. Konnov and V. A. Zakharov. "An Approach to the Verification of Symmetric Parameterized Distributed Systems". In: *Programming and Computer Software* 31.5 (2005), pp. 225–236. DOI: 10.1007/s11086-005-0034-4.

Peer-reviewed conference proceedings

[14] N. Bertrand, I. Konnov, M. Lazic, and J. Widder. "Verification of Randomized Consensus Algorithms Under Round-Rigid Adversaries". In: *CONCUR 2019*. Vol. 140. LIPIcs. 2019, 33:1–33:15. DOI: 10.4230/LIPIcs.CONCUR.2019.33.

[15] I. Stoilkovska, I. Konnov, J. Widder, and F. Zuleger. "Verifying Safety of Synchronous Fault-Tolerant Algorithms Bounded Model Checking". In: *TACAS*. 2019, pp. 357–374. DOI: 10.1007/978-3-030-17465-1_20.

[16] I. Konnov and J. Widder. "ByMC: Byzantine Model Checker". In: *Leveraging Applications of Formal Methods, Verification and Validation. Distributed Systems*. Cham: Springer International Publishing, 2018, pp. 327–342. DOI: 10.1007/978-3-030-03424-5_22. URL: https://hal.inria.fr/hal-01909653.

[17] J. Kukovec, I. Konnov, and J. Widder. "Reachability in Parameterized Systems: All Flavors of Threshold Automata". In: *29th International Conference on Concurrency Theory, CONCUR 2018, September 4-7, 2018, Beijing, China*. 2018, 19:1–19:17. DOI: 10.4230/LIPIcs.CONCUR.2018.19. URL: https://doi.org/10.4230/LIPIcs.CONCUR.2018.19.

[18] J. Kukovec, T. Tran, and I. Konnov. "Extracting Symbolic Transitions from TLA$^+$ Specifications". In: *Abstract State Machines, Alloy, B, TLA, VDM, and Z*. 2018, pp. 89–104. DOI: 10.1007/978-3-319-91271-4_7. URL: http://forsyte.at/wp-content/uploads/abz2018_full.pdf.

[19] I. V. Konnov, M. Lazic, H. Veith, and J. Widder. "A short counterexample property for safety and liveness verification of fault-tolerant distributed algorithms". In: *Proceedings of the 44th ACM SIGPLAN Symposium on Principles of Programming Languages, POPL 2017, Paris, France, January 18-20, 2017*. 2017, pp. 719–734. URL: http://dl.acm.org/citation.cfm?id=3009860.

[20] I. V. Konnov, J. Widder, F. Spegni, and L. Spalazzi. "Accuracy of Message Counting Abstraction in Fault-Tolerant Distributed Algorithms". In: *Verification, Model Checking, and Abstract Interpretation - 18th International Conference, VMCAI 2017, Paris, France, January 15-17, 2017, Proceedings*. 2017, pp. 347–366. DOI: 10.1007/978-3-319-52234-0_19.

[21] M. Lazic, I. Konnov, J. Widder, and R. Bloem. "Synthesis of Distributed Algorithms with Parameterized Threshold Guards". In: *OPODIS*. Vol. 95. LIPIcs. 2017, 32:1–32:20. URL: https://doi.org/10.4230/LIPIcs.OPODIS.2017.32.

[22] I. Konnov, T. Kotek, Q. Wang, H. Veith, S. Bliudze, and J. Sifakis. "Parameterized Systems in BIP: Design and Model Checking". In: *27th International Conference on Concurrency Theory, CONCUR 2016, August 23-26, 2016, Québec City, Canada*. Vol. 59. LIPIcs. 2016, 30:1–30:16. DOI: 10.4230/LIPIcs.CONCUR.2016.30.

[23] I. Konnov, H. Veith, and J. Widder. "SMT and POR beat Counter Abstraction: Parameterized Model Checking of Threshold-Based Distributed Algorithms". In: *CAV (Part I)*. Vol. 9206. LNCS. 2015, pp. 85–102. DOI: 10.1007/978-3-319-21690-4_6.

[24] I. Konnov, H. Veith, and J. Widder. "On the Completeness of Bounded Model Checking for Threshold-Based Distributed Algorithms: Reachability". In: *CONCUR 2014*. Vol. 8704. LNCS. 2014, pp. 125–140. DOI: 10.1007/978-3-662-44584-6_10.

[25] A. John, I. Konnov, U. Schmid, H. Veith, and J. Widder. "Brief announcement: parameterized model checking of fault-tolerant distributed algorithms by abstraction". In: *PODC*. 2013, pp. 119–121. DOI: 10.1145/2484239.2484285.

[26] A. John, I. Konnov, U. Schmid, H. Veith, and J. Widder. "Parameterized model checking of fault-tolerant distributed algorithms by abstraction". In: *Formal Methods in Computer-Aided Design, FMCAD 2013, Portland, OR, USA, October 20-23, 2013*. 2013, pp. 201–209. DOI: 10.1109/FMCAD.2013.6679411.

[27] A. John, I. Konnov, U. Schmid, H. Veith, and J. Widder. "Towards Modeling and Model Checking Fault-Tolerant Distributed Algorithms". In: *Model Checking Software - 20th International Symposium, SPIN 2013, Stony Brook, NY, USA, July 8-9, 2013*. Vol. 7976. LNCS. 2013, pp. 209–226. DOI: 10.1007/978-3-642-39176-7_14.

[28] I. V. Konnov. "Application of CHEAPS System to Parameterized Model Checking of Distributed Systems". In Russian. In: *Proc. 3rd All-Russia Conf. on Methods and Techniques of Information Processing*. Moscow, 2009, pp. 116–122. ISBN: 978-5-89407-373-3.

[29] V. A. Zakharov and I. V. Konnov. "On the Verification of Asynchronous Parameterized Distributed Programs". In Russian. In: *Proc. 2nd All-Russia Conf. on Methods and Techniques of Information Processing*. MAKS Press, Moscow, 2005, pp. 267–372. ISBN: 5-89407-230-1.

[30] I. V. Konnov and V. A. Zakharov. "On the Verification of Parameterized Symmetric Distributed Programs". In Russian. In: *Proc. 1st All-Russia Conf. on Methods and Techniques of Information Processing*. MAKS Press, Moscow, 2003, pp. 395–400. ISBN: 5-89407-163-1.

Invited speaker at conferences and workshops

[31] I. Konnov. *Model Checking of Threshold-based Fault-Tolerant Distributed Algorithms*. Invited talk at the 7th Workshop on Program Semantics, Specification & Verification, St. Petersburg, Russia, June. 2016. URL: `http://pssv-conf.ru/en/2016/program`.

[32] I. Konnov. *Parametrized Model Checking of Fault-tolerant Distributed Algorithms by Abstraction*. Tutorial at the International Conference Tools and Methods of Program Analysis, Kostroma, Russia, November. 2014. URL: `http://tmpaconf.org/pasteventsmaterialsen/keynote-speakersen#2014`.

Tutorials

[33] I. Konnov. *What my computer can find about your distributed algorithm*. Tutorial at the Dagstuhl seminar 18211 "Formal Methods and Fault-Tolerant Distributed Computing: Forging an Alliance", Dagstuhl, Germany, May. 2018. URL: `https://www.dagstuhl.de/en/program/calendar/semhp/?semnr=18211`.

[34] I. Konnov. *Model Checking of Fault-tolerant Distributed Algorithms*. Tutorial at the Spring School Logic and Verification, Vienna, April. 2016. URL: `http://forsyte.at/events/love2016/`.

[35] H. Veith and I. Konnov. *Model Checking of Fault-tolerant Distributed Algorithms*. Tutorial at the Summer School on Verification Technology, Systems & Applications, Luxembourg, Luxembourg, October. 2014. URL: `http://resources.mpi-inf.mpg.de/departments/rg1/conferences/vtsa14/`.

Peer-reviewed workshop contributions

[36] I. Konnov, J. Kukovec, and T.-H. Tran. *BmcMT: Bounded Model Checking of TLA+ Specifications with SMT*. Contribution to TLA+ Community Meeting, Oxford, UK, July. 2018. URL: `http://tla2018.loria.fr/contrib/konnov.pdf`.

[37] I. Konnov and S. Merz. *Model Checking of Fault-Tolerant Distributed Algorithms: from Classics towards Contemporary*. Contribution to DSN Workshop on Byzantine Consensus and Resilient Blockchains, Luxembourg City, Luxembourg, June. 2018. URL: `https://bcrb18.fim.uni-passau.de/shortpapers/bcrb18-konnov-merz.pdf`.

[38] I. Konnov, H. Veith, and J. Widder. *Challenges in Model Checking of Fault-tolerant Designs in TLA+*. Contribution to the 8th International Workshop on Exploiting Concurrency Efficiently and Correctly, San Francisco, CA, USA, July. 2015. URL: `http://multicore.doc.ic.ac.uk/events/ec2/KonnovVeithWidder.pdf`.

[39] I. Konnov. "CheAPS: a Checker of Asynchronous Parameterized Systems". In: *WING 2010*. Ed. by A. Voronkov, L. Kovacs, and N. Bjorner. Vol. 1. EPiC Series. EasyChair, 2012, pp. 128–129. URL: `http://www.easychair.org/publications/?page=355792421`.

[40] I. V. Konnov and V. A. Zakharov. "Using Adaptive Symmetry Reduction for LTL Model Checking". In: *Proc. International Workshop on Program Semantics, Specification and Verification (PSSV 2010) affiliated with CSR 2010*. 2010, pp. 5–11. URL: `http://csr2010.ksu.ru/PSSV.html`.

[41] V. Zakharov and I. Konnov. "An Invariant-based Approach to the Verification of Asynchronous Parameterized Networks". In: *International Workshop on Invariant Generation (WING'07)*. 2007, pp. 41–55. URL: `http://www.risc.uni-linz.ac.at/publications/download/risc_3128/proceedings.pdf`.

Conference contributions

[42] V. V. Antonenko and I. V. Konnov. "On the Choice of a Simulation Run-Time Infrastructure based on High-Level Architecture". In Russian. In: *17th International Conference on Computational Mechanics and Contemporary Application Software Systems 2011 (VMSPPS'2011), Alushta, Ukraine*. 2011, pp. 36–38. ISBN: 978-5-7035-2269-1.

[43] G. A. Klimov, D. D. Kozlov, and I. V. Konnov. "Static analysis for security of web applications developed in Python". In Russian. In: *Proc. 5th All-Russia Scientific and Technical Conf. Microsoft technologies in theory and practice of programming*. 2008.

[44] I. V. Konnov. "The system for verfication of parameterized models of asynchronous distributed systems (CHEAPS)". In Russian. In: *Proc. 5th All-Russia Scientific and Technical Conf. Microsoft technologies in theory and practice of programming*. 2008.

Workshop contributions

[45] I. Konnov. *Making TLA+ model checking symbolic*. Talk at VeriDis + Matryoshka workshop, Amsterdam, Netherlands. June 2019. URL: `http://matryoshka.gforge.inria.fr/matryoshka2019/index.html`.

[46] I. Konnov. *Towards symbolic model checking of fault-tolerant designs in TLA+*. Talk at the Helmut Veith Memorial Workshop, Obertauern, Austria, January. 2018. URL: `http://hvw2018.cs.uni-salzburg.at/schedule`.

[47] I. Konnov. *Verifying Safety and Liveness of Threshold-guarded Fault-Tolerant Distributed Algorithms*. Talk at the Helmut Veith Memorial Workshop, Obergurgl, Austria, February. 2017. URL: `http://cbr.uibk.ac.at/events/hvw/schedule.php`.

[48] I. Konnov. *SMT and POR beat Counter Abstraction: Parameterized Model Checking of Threshold-based Distributed Algorithms*. Workshop contribution at Alpine Verification Meeting, Attersee, Austria, May. 2015.

[49] A. B. Glonina, I. Konnov, V. V. Podymov, D. Y. Volkanov, V. A. Zakharov, and D. A. Zorin. *An experience on using simulation environment DYANA augmented with UPPAAL for verification of embedded systems defined by UML statecharts*. Contribution to the CAV workshop VES13, St. Petersburg, Russia, July. 2013. URL: `http://forsyte.at/wp-content/uploads/ves13-gkpvzz.pdf`.

[50] I. Konnov. *Parameterized Model Checking by Network Invariants: the Asynchronous Case*. Contribution to: LICS Workshop AISS, Dubrovnik, Croatia, June 2012. 2012. URL: `http://forsyte.at/wp-content/uploads/12konnov-aiss.pdf`.

[51] I. Konnov, H. Veith, and J. Widder. *Who is afraid of Model Checking Distributed Algorithms?* Contribution to the 5th International Workshop on Exploiting Concurrency Efficiently and Correctly, Berkeley, CA, USA, July 2012. 7 citations excl. self-citations. 2012. URL: `http://forsyte.at/wp-content/uploads/2012/07/ec2-konnov.pdf`.

[52] I. V. Konnov and O. Letichevsky. "Model Checking GARP Protocol using Spin and VRS". In: *International Workshop on Automata, Algorithms, and Information Technologies*. 2010. DOI: `10.1007/s10559-010-9244-8`.

Invited Seminar Talks

[53] I. Konnov. *Bounded Model Checking of TLA+ Specifications with SMT*. Invited talk at ANR "FREDDA" meeting, Univ. Paris-Diderot, Paris, France. 2019. URL: `https://www.irif.fr/~fredda/meetings.html`.

[54] I. Konnov. *Making TLA+ model checking symbolic*. Talk at NETYS workshop on Verification of Distributed Systems, Marrakech, Morocco. June 2019. URL: `http://goto.ucsd.edu/~gleissen/vds-test/`.

[55] I. Konnov. *Synthesizing Distributed Algorithms with Parameterized Threshold Guards*. Talk at the NETYS Workshop on Verification of Distributed Systems, Essaouira, Morocco, May. 2018. URL: `http://netys.net/VDS2018.html`.

[56] J. Widder and I. Konnov. *Logical Methods for the Correctness of Distributed Algorithms*. RISE PI talk at "Alpine Verification Meeting", Wagrain, Austria, September. 2018. URL: `https://avm2018.iaik.tugraz.at/program/`.

[57] I. Konnov. *Model checking of distributed algorithms for LARGE-scale systems*. Interview talk at INRIA (awarded 1 of 4 researcher positions (CR1) at INRIA), Paris, France, May. 2017.

[58] I. Konnov. *Verifying Safety and Liveness of Threshold-guarded Fault-Tolerant Distributed Algorithms*. Talk at LORIA/INRIA seminar, Nancy, France, May. 2017.

[59] I. Konnov. *Model Checking of Fault-tolerant Distributed Algorithms: Safety and Liveness*. Invited talk at the Seminar of Rigorous System Design Laboratory, Lausanne, Switzerland, September. 2016.

[60] I. Konnov. *Model Checking of Threshold-based Fault-tolerant Distributed Algorithms*. Invited talk at the Seminar on Foundations of Mathematics and Theoretical Computer Science, Ljubljana University, Ljubljana, Slovenia, May. 2016.

[61] I. Konnov. *Model Checking of Threshold-Guarded Distributed Algorithms: Beyond Reachability*. Invited talk at the Vericlub Seminar (Bertrand Meyer), Toulouse, France, November. 2016.

[62] I. Konnov. *Model Checking of Threshold-based Fault-tolerant Distributed Algorithms*. Invited talk at Amazon, Herndon, VA, USA, June. 2015.

[63] I. Konnov. *Model checking of threshold-based fault-tolerant distributed algorithms*. Talk at the Dagstuhl Seminar on Distributed Cloud Computing, Dagstuhl, Germany, February. 2015. URL: https://www.dagstuhl.de/en/program/calendar/semhp/?semnr=15072.

[64] I. Konnov. *SMT and POR beat Counter Abstraction*. Invited talk at the RiSE Seminar at Institute of Science and Technology Austria, Klosterneuburg, Austria, April. 2015.

[65] I. Konnov. *On Completeness of Bounded Model Checking for Threshold-based Distributed Algorithms: Reachability*. Talk at the Seminar on Theoretical Problems in Programming, Moscow State University, Moscow, Russia, February. 2014.

[66] I. Konnov. *Counter Attack on Byzantine Generals*. Talk at the Dagstuhl Seminar on Formal Verification of Distributed Algorithms, Dagstuhl, Germany, April. 2013. URL: https://www.dagstuhl.de/de/programm/kalender/semhp/?semnr=18211.

[67] I. Konnov. *Counter Attack on Byzantine Generals*. Talk at the Seminar on Theoretical Problems in Programming, Moscow State University, Moscow, Russia, February. 2013.

[68] I. Konnov. *Who is Afraid of Model Checking Distributed Algorithms*. Talk at the PUMA/RiSE Seminar, Goldegg, Austria, September. 2012.

[69] I. Konnov. *An invariant-based approach to the verification of asynchronous parameterized networks*. Talk at the Concurrency Seminar, Computing Laboratory, Oxford University, Oxford, UK, February. 2011.

[70] I. Konnov. *Two Techniques of Parameterized Model Checking and Symmetry Reduction*. Talk at the RiSE Seminar, TU Vienna, Vienna, Austria, April. 2011.

[71] I. V. Konnov. *CheAPS: Parameterized Model Checking Tool*. Joint Workshop of Microsoft Research and Institute for System Programming Russian Academy of Sciences, Moscow, June 2009. 2009.

Technical reports

[72] N. Bertrand, I. Konnov, M. Lazic, and J. Widder. *Verification of Randomized Distributed Algorithms under Round-Rigid Adversaries*. Nov. 2018. URL: https://hal.inria.fr/hal-01925533.

[73] I. Konnov, M. Lazic, H. Veith, and J. Widder. *A Short Counterexample Property for Safety and Liveness Verification of Fault-Tolerant Distributed Algorithms*. Extended version of the POPL'17 paper including the proofs. 2016. URL: http://arxiv.org/abs/1608.05327.

[74] A. John, I. Konnov, U. Schmid, H. Veith, and J. Widder. *Counter Attack on Byzantine Generals: Parameterized Model Checking of Fault-tolerant Distributed Algorithms*. Oct. 2012. URL: http://arxiv.org/abs/1210.3846.

[75] A. John, I. Konnov, U. Schmid, H. Veith, and J. Widder. *Starting a Dialog between Model Checking and Fault-tolerant Distributed Algorithms*. Oct. 2012. URL: http://arxiv.org/abs/1210.3839.

[76] P. Bulychev, I. V. Konnov, and V. A. Zakharov. "Computing (bi)simulation relations preserving CTL^*_{-X} for ordinary and fair Kripke structures". In: *Mathemathical Methods and Algorithms, Institute of Systems Programming of the Russian Academy of Sciences*. Vol. 12. 2006, pp. 59–76. URL: http://discopal.ispras.ru/pdfs/issue-2006-12/cs-isp-sbornik.pdf.

[77] I. Konnov and V. Zakharov. "On the verification of asynchronous parameterized networks of communicating processes by model checking". In: *Mathemathical Methods and Algorithms, Institute of Systems Programming of the Russian Academy of Sciences*. Vol. 12. 2006, pp. 37–58. URL: http://discopal.ispras.ru/pdfs/issue-2006-12/cs-isp-sbornik.pdf.