

Publications of Nikolai Kosmatov¹

Publications in Computer Science

Patent Applications

- [1] Nikolai Kosmatov, Virgile Prevosto, and Thibault Martin. *Method and system for verification of redundant-check countermeasures*. Patent application. Submitted on August 20, 2021 to European Patent Office. 2021. URL: <https://bit.ly/44pKEc9>.
- [2] Paul Dubrulle, Stéphane Louise, Christophe Gaston, Mathieu Jan, Nikolai Kosmatov, and Arnault Lapitre. *Outil et procédé de conception et de validation d'un système flots de données par un modèle formel (Tool and method for design and validation of a data flow system by a formal model)*. Patent application. In French. Submitted on August 31, 2018 to INPI (French Patent Office). 2018. URL: <https://bit.ly/3KUJVJd>.
- [3] Kostyantyn Vorobyov, Nikolai Kosmatov, and Julien Signoles. *A computer-implemented method and a system for encoding a heap application memory state using shadow memory*. Patent application. Submitted on September 27, 2016 to European Patent Office. Submitted on September 15, 2017 to US Patent Office. 2016. URL: <https://bit.ly/30Shk80>.
- [4] Kostyantyn Vorobyov, Nikolai Kosmatov, and Julien Signoles. *A computer-implemented method and a system for encoding a stack application memory state using shadow memory*. Patent application. Submitted on December 7, 2016 to European Patent Office. Submitted on November 29, 2017 to US Patent Office. 2016. URL: <https://bit.ly/45DdKG5>.

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- [5] Christophe Gaston, Nikolai Kosmatov, and Pascale Le Gall, eds. *Revised Selected Papers of IFIP-ICTSS 2019, Special Issue, Software Quality Journal (SQJ)*. Vol. 30. 1. Springer, Mar. 2022. DOI: 10.1007/s11219-022-09590-5. Rank C.
- [6] Erika Abraham and Nikolai Kosmatov, eds. *Proc. of the Software Verification and Testing Track (SAC-SVT 2021), Part of the 36th Annual ACM/SIGAPP Symposium on Applied Computing (SAC 2021)*. ACM, 2021. ISBN: 978-1-4503-8104-8. DOI: 10.1145/3412841. Rank B.
- [7] Matthias Gudemann and Nikolai Kosmatov, eds. *Proc. of the Software Verification and Testing Track (SAC-SVT 2020), Part of the 35th Annual ACM/SIGAPP Symposium on Applied Computing (SAC 2020)*. ACM, 2020. ISBN: 978-1-4503-6866-7. DOI: 10.1145/3341105. URL: <https://guedemann.org/svt2020/>. Rank B.
- [8] Christophe Gaston, Nikolai Kosmatov, and Pascale Le Gall, eds. *Proc. of the 31st IFIP WG 6.1 International Conference on Testing Software and Systems*. Vol. 11812. LNCS. Springer, Oct. 2019. ISBN: 978-3-030-31279-4. DOI: 10.1007/978-3-030-31280-0.

¹Updated on Feb 11, 2024. All publications are signed with the following spelling: "Nikolai Kosmatov". Ranks of journals and conferences are given when known according to ERA2010/CORE2020 ranking databases.

- [9] Akram Idani and Nikolai Kosmatov, eds. *Actes des 16èmes journées AFADL: Approches Formelles dans l’Assistance au Développement de Logiciels (AFADL 2017)*. Published online. 2017. URL: http://afadl2017.imag.fr/AFADL_Procs_2017.pdf.
- [10] Jasmin Christian Blanchette, Francis Bordeleau, Nikolai Kosmatov, Alfonso Pierantonio, Gabi Taentzer, and Manuel Wimmer, eds. *Revised Selected Papers of STAF 2015, Special Issue, Software & Systems Modeling (SoSyM)*. Springer, 2015. DOI: 10.1007/s10270-018-0686-1. Rank B.
- [11] Jasmin Christian Blanchette and Nikolai Kosmatov, eds. *Proc. of the 9th International Conference on Tests and Proofs (TAP 2015), Held as Part of STAF 2015*. Vol. 9154. LNCS. Springer, 2015. ISBN: 978-3-319-21214-2. DOI: 10.1007/978-3-319-21215-9. Rank B.

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- [12] Nikolai Kosmatov. “Chapter XI: Concolic Test Generation and the Cloud: Deployment and Verification Perspectives”. In: *Software Testing in the Cloud: Perspectives on an Emerging Discipline*. Ed. by Scott Tilley and Tauhida Parveen. IGI Global, 2013. ISBN: 978-1-46662-536-5. DOI: 10.4018/978-1-4666-2536-5.ch011.
- [13] Nikolai Kosmatov. “Chapter XI: Constraint-Based Techniques for Software Testing”. In: *Artificial Intelligence Applications for Improved Software Engineering Development: New Prospects*. Ed. by Farid Meziane and Sunil Vadera. IGI Global, 2010, pp. 231–251. ISBN: 978-1-60566-758-4. DOI: 10.4018/978-1-60566-758-4.ch011.

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- [14] Dara Ly, Nikolai Kosmatov, Frédéric Louergue, and Julien Signoles. “Sound Runtime Assertion Checking for Memory Properties via Program Transformation”. In: *Formal Asp. Comput.* (2023). To appear. ISSN: 0934-5043. DOI: 10.1145/3605951. Rank B.
- [15] Jean-Christophe Léchenet, Nikolai Kosmatov, and Pascale Le Gall. “Efficient Computation of Arbitrary Control Dependencies”. In: *Theor. Comput. Sci.* 969 (2023). ISSN: 0304-3975. DOI: 10.1016/J.TCS.2023.114029. Rank A.
- [16] Patrick Baudin, François Bobot, David Bühler, Loïc Correnson, Florent Kirchner, Nikolai Kosmatov, André Maroneze, Valentin Perrelle, Virgile Prevosto, Julien Signoles, and Nicky Williams. “The dogged pursuit of bug-free C programs: the Framac-C software analysis platform”. In: *Commun. ACM* 64.8 (2021), pp. 56–68. ISSN: 0001-0782. DOI: 10.1145/3470569.
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- [20] Guillaume Petiot, Nikolai Kosmatov, Bernard Botella, Alain Giorgetti, and Jacques Julliand. “How Testing Helps to Diagnose Proof Failures”. In: *Formal Asp. Comput.* 30.6 (2018), pp. 629–657. ISSN: 0934-5043. DOI: 10.1007/s00165-018-0456-4. Rank B.
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- [25] Loïc Correnson, Allan Blanchard, Adel Djoudi, and Nikolai Kosmatov. “Automate where Automation Fails: Proof Strategies for Frama-C/WP”. In: *Proc. of the 30th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS 2024), Held as Part of the European Joint Conferences on Theory and Practice of Software (ETAPS 2024)*. LNCS. To appear. Springer, Apr. 2024. Rank A.
- [26] Téo Bernier, Yani Ziani, Nikolai Kosmatov, and Frédéric Loulergue. “Combining Deductive Verification with Shape Analysis”. In: *Proc. of the 27th International Conference on Fundamental Approaches to Software Engineering (FASE 2024), Held as Part of the European Joint Conferences on Theory and Practice of Software (ETAPS 2024)*. LNCS. To appear. Springer, Apr. 2024. Rank B.
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- [30] Lionel Blatter, Nikolai Kosmatov, Virgile Prevosto, and Pascale Le Gall. “Certified Verification of Relational Properties”. In: *Proc. of the 17th International Conference on integrated Formal Methods (iFM 2022)*. Vol. 13274. LNCS. Springer, June 2022, pp. 86–105. DOI: 10.1007/978-3-031-07727-2_6. Rank B.
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Selected² Communications

Recent Invited Talks and Seminars

- [125] Nikolai Kosmatov. “Advanced Test Coverage Criteria: Specify and Measure, Cover and Unmask”. In: *Seminar at LRI, Univ. Paris-Sud*. Feb 07, 2020. Orsay, Feb. 2020.
- [126] Nikolai Kosmatov. “Towards Formal Verification of IoT Operating Systems with Frama-C”. In: *Seminar at Univ. of Twente*. Dec 12, 2019. Twente, Netherlands, Dec. 2019.
- [127] Nikolai Kosmatov. “Towards Formal Verification of IoT Operating Systems with Frama-C”. In: *The IEEE EuroS&P Workshop on Software Security for Internet of Things (SSIoT 2019), Co-located with IEEE EuroS&P 2019*. June 16, 2019. Twente, Netherlands, June 2019.
- [128] Nikolai Kosmatov. “Towards Formal Verification of Contiki OS with Frama-C”. In: *Seminar at IRISA – INRIA Rennes*. March 30, 2018. Rennes, Mar. 2018.
- [129] Nikolai Kosmatov. “Combined static and dynamic analyses in Frama-C: An Overview”. In: *the 2nd ARVI COST School on Runtime Verification*. March 20, 2018. Praz sur Arly, France, Mar. 2018.
- [130] Allan Blanchard and Nikolai Kosmatov. “Towards Formal Verification of Contiki OS with Frama-C”. In: *Seminar at CEA List*. March 6, 2018. Palaiseau, Mar. 2018.
- [131] Nikolai Kosmatov. “Advanced Test Coverage Criteria: Specify and Measure, Cover and Unmask”. In: *Seminar at FEMTO-ST/DISC, University of Besançon*. February 27, 2018. Besançon, Feb. 2018.
- [132] Nikolai Kosmatov. “Specification and proof of relational properties with Frama-C”. In: *the 2017 JML Workshop*. December 18, 2017. Orlando, Florida, USA, Dec. 2017.
- [133] Nikolai Kosmatov. “Advanced Test Coverage Criteria: Specification and Support in Automatic Testing Tools”. In: *the 13th Summer School on Software Testing, Verification & Validation (TAROT 2017)*. June 26, 2017. Naples, Italy, June 2017.
- [134] Nikolai Kosmatov. “Combinations of Static and Dynamic Analyses in Frama-C: An Overview”. In: *Seminar at SnT, University of Luxembourg*. February 11, 2016. Luxembourg, Feb. 2016.
- [135] Nikolai Kosmatov. “Fast as a Shadow, Expressive as a Tree: Hybrid Memory Monitoring for C”. In: *Séminaire de Saclay sur les Méthodes Formelles (SASEFOR)*. November 24, 2015. Orsay, France, Nov. 2015.
- [136] Nikolai Kosmatov and Julien Signoles. “Combinations of Static and Dynamic Analyses in Frama-C: An Overview”. In: *Seminar at VERIMAG*. September 10, 2015. Grenoble, France, Sept. 2015.

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- [137] Nikolai Kosmatov. “Applications of formal verification for secure Cloud environments at CEA LIST”. In: *Premier Atelier sur la Sécurité dans le Cloud (SEC 2015), co-localisé avec la Conférence d’informatique en Parallélisme, Architecture et Système (COMPAS 2015)*. June 30, 2015. Lille, France, June 2015.
- [138] Sébastien Bardin and Nikolai Kosmatov. “Combining Static and Dynamic Approaches to Software Verification in Frama-C”. In: *Seminar at Imperial College London*. July 1, 2015. London, UK, July 2015.
- [139] Nikolai Kosmatov. “Combinations of Static and Dynamic Analyses in Frama-C: An Overview”. In: *Seminar at Fraunhofer FOKUS*. June 1, 2015. Berlin, Germany, June 2015.
- [140] Nikolai Kosmatov. “Symbolic Execution and Advanced Test Coverage Criteria”. In: *the 1st International Workshop on Usages of Symbolic Execution (USE 2015), co-located with the 20th International Symposium on Formal Methods (FM 2015)*. June 23, 2015. Oslo, Norway, June 2015.
- [141] Nicky Williams and Nikolai Kosmatov. “Automated Structural Unit Testing with PathCrawler”. In: *the 8th International Summer School on Training And Research On Testing (TAROT 2012)*. July 5, 2012. Besançon/Métabief, France, July 2012.

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- [143] Allan Blanchard, Nikolai Kosmatov, and Frédéric Loulergue. “Formal Verification for an Internet of Secured Things”. In: *the 34th ACM/SIGAPP Symposium On Applied Computing, Software Verification and Testing Track (SAC 2019)*. April 08, 2019. Limassol, Cyprus, Apr. 2019.
- [144] Nikolai Kosmatov. “Advanced Test Coverage Criteria: Specify and Measure, Cover and Unmask”. In: *TestCon 2019*. April 3, 2019. Moscow, Russia, Apr. 2019.
- [145] Allan Blanchard and Nikolai Kosmatov. “Cybersecurity and Internet of Things: Verify Your Code Today!” In: *the 2019 International Cybersecurity Forum*. January 22, 2019. Lille, France, Jan. 2018.
- [146] Allan Blanchard, Nikolai Kosmatov, and Frédéric Loulergue. “Towards Reliable Things: Formal Verification of IoT Software with Frama-C”. In: *the 29th IEEE International Symposium on Software Reliability Engineering (ISSRE 2018)*. October 16, 2018. Memphis, TN, USA, Oct. 2018.
- [147] Allan Blanchard, Nikolai Kosmatov, and Frédéric Loulergue. “Secure Your Things: Secure Development of IoT Software with Frama-C”. In: *the IEEE Cybersecurity Development Conference (SecDev 2018)*. September 30, 2018. Cambridge, MA, USA, Sept. 2018.
- [148] Allan Blanchard, Nikolai Kosmatov, and Frédéric Loulergue. “Secure Your Things: Verification of IoT Software with Frama-C”. In: *the 2018 International Conference on High Performance Computing and Simulation (HPCS 2018)*. July 16, 2018. Orléans, France, July 2018.

- [149] Sébastien Bardin and Nikolai Kosmatov. “Specify and Measure, Cover and Unmask: A Proof-Friendly View of Advanced Test Coverage Criteria”. In: *the 12th International Conference on Tests and Proofs (TAP 2018)*. June 28, 2018. Toulouse, France, June 2018.
- [150] Allan Blanchard, Nikolai Kosmatov, and Frédéric Loulergue. “Towards Secure Things, or How to Verify IoT Software with Frama-C”. In: *the Zooming Innovation in Consumer Electronics International Conference (ZINC 2018)*. May 30, 2018. Novi Sad, Serbia, May 2018.
- [151] Nikolai Kosmatov and Julien Signoles. “Frama-C, a Collaborative Framework for C Code Verification”. In: *the 28th IEEE International Symposium on Software Reliability Engineering (ISSRE 2017)*. October 26, 2017. Toulouse, France, Oct. 2017.
- [152] Sébastien Bardin and Nikolai Kosmatov. “Advanced Test Coverage Criteria: Specify and Measure, Cover and Unmask”. In: *the 29th IFIP International Conference on Testing Software and Systems (ICTSS 2017)*. October 10, 2017. St. Petersburg, Russia, Oct. 2017.
- [153] Nikolai Kosmatov and Julien Signoles. “Frama-C, a Collaborative Framework for C Code Verification”. In: *the 16th International Conference on Runtime Verification (RV 2016)*. September 27, 2016. Madrid, Spain, Sept. 2016.
- [154] Nikolai Kosmatov and Julien Signoles. “Runtime Assertion Checking and its Combinations with Static and Dynamic Analyses”. In: *the 8th International Conference on Tests and Proofs (TAP 2014), Held as Part of STAF 2014*. July 25, 2014. York, UK, June 2014.
- [155] Nikolai Kosmatov, Virgile Prevosto, and Julien Signoles. “Specification and Proof of Programs with Frama-C”. In: *Proc. of the 28th Annual ACM Symposium on Applied Computing, Software Verification and Testing Track (SAC-SVT 2013)*. March 18, 2013. Coimbra, Portugal, Mar. 2013.
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