

Karl Palmskog
The University of Texas at Austin
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Curriculum Vitae

Karl Palmskog

Research Interests

I am interested in construction of correct and efficient (distributed) software systems, and reasoning about them formally. I also take a broad interest in programming languages, software engineering, and program verification.

Education

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| Feb 2009 - Nov 2014 | Ph.D., Computer Science , 240 ECTS credits, KTH Royal Institute of Technology, Sweden. Research on distributed systems and programming languages. Chairman of the Ph.D. student council at the School of Computer Science and Communication during 2013. |
| Aug 2001 - May 2007 | M.Sc., Computer Science and Engineering , 270 ECTS credits, KTH Royal Institute of Technology, Sweden. Specialization in formal design techniques. Master's project at Ericsson AB: "Verification of the Session Management Protocol". |

Employment

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| Jan 2018 - | Research Fellow , The University of Texas at Austin, TX, USA. Postdoctoral research on software engineering. |
| Sep 2017 - Jan 2018 | Visiting Scholar , University of Illinois at Urbana-Champaign, IL, USA. Postdoctoral research on software verification and proof engineering. |
| Jan 2015 - Aug 2017 | Postdoctoral Research Associate , University of Illinois at Urbana-Champaign, IL, USA. Postdoctoral research on programming languages. |
| Nov 2014 - Dec 2014 | Researcher , KTH Royal Institute of Technology, Stockholm, Sweden. Postdoctoral research on programming languages and distributed systems. |
| Feb 2014 - Sep 2014 | Research Engineer , KTH Royal Institute of Technology, Stockholm, Sweden. Research on programming languages and distributed systems. |
| Feb 2009 - Jan 2014 | Doctoral Student , KTH Royal Institute of Technology, Stockholm, Sweden. Lecturer, teaching assistant, and lab assistant in several computer science courses. |
| Feb 2007 - Jan 2009 | Developer , Jaycut AB, Stockholm, Sweden. Company co-founder and developer of a platform for online video editing. Company sold in 2011 to Research in Motion (now Blackberry). |

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Software/Tools

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| Verdi verification framework | https://github.com/uwplse/verdi |
| Verdi Raft consensus protocol | https://github.com/uwplse/verdi-raft |
| Verdi tree aggregation protocol | https://github.com/DistributedComponents |
| Verdi Chord ring protocol | https://github.com/DistributedComponents |
| Cheerios serialization library | https://github.com/uwplse/cheerios |
| Coq plugins for proof analysis | https://github.com/proofengineering |
| iCoq proof selection tool | http://cozy.ece.utexas.edu/icoq/ |

Professional Service

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| FM 2018 | External Reviewer |
| QEST 2017 | External Reviewer |
| COORDINATION 2017 | External Reviewer |
| PDP 2017 | External Reviewer |
| QEST 2016 | Proceedings Chair |
| CONCUR 2016 | External Reviewer |
| COORDINATION 2016 | External Reviewer |
| FORTE 2016 | External Reviewer |
| iFM 2016 | External Reviewer |
| SRDS 2015 | External Reviewer |
| COORDINATION 2015 | External Reviewer |
| CPP 2013 | External Reviewer |
| TOMACS | Reviewer |

Publications

- [1] G. Agha and K. Palmskog. Inference of concurrency structure to transform threads into actors. In P. Derler, M. Lohstroh, and M. Sirjani, editors, *Festschrift for Edward A. Lee*, 2017. Accepted, to appear.
- [2] G. Agha and K. Palmskog. A survey of statistical model checking. *ACM Trans. Model. Comput. Simul.*, 28(1):6:1–6:39, Jan. 2018.
- [3] A. Celik, K. Palmskog, and M. Gligoric. iCoq: Regression proof selection for large-scale verification projects. In *Automated Software Engineering*, pages 171–182, 2017.
- [4] A. Celik, K. Palmskog, and M. Gligoric. A regression proof selection tool for Coq. In *International Conference on Software Engineering, Demo*, 2018. Accepted, to appear.
- [5] M. Dam and K. Palmskog. Efficient and fully abstract routing of futures in object network overlays. In *Proceedings of the 2013 Workshop on Programming Based on Actors, Agents, and Decentralized Control, AGERE! '13*, pages 49–60, New York, NY, USA, 2013. ACM.

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- [6] M. Dam and K. Palmskog. Location independent routing in process network overlays. In *Parallel, Distributed and Network-Based Processing (PDP), 2014 22nd International Conference on*, pages 715–724. IEEE, Feb 2014.
- [7] M. Dam and K. Palmskog. Location-independent routing in process network overlays. *Service Oriented Computing and Applications*, 9(3):285–309, Sep 2015.
- [8] R. Doenges, J. R. Wilcox, D. Woos, Z. Tatlock, and K. Palmskog. Verifying implementations of churn-tolerant distributed systems. In *The Third International Workshop on Coq for Programming Languages (CoqPL 17)*, January 2017.
- [9] Y. Ismailov, K. Palmskog, M. Widell, P. Arvidsson, and Y. Wang. Session Layer Resurgence: Towards Mobile, Disconnection- and Delay-Tolerant Communication. In *Proceedings of 4th European Conference on Universal Multiservice Networks*, pages 337–345. IEEE, Feb. 2007.
- [10] K. V. Jónsson, K. Palmskog, and Y. Vigfússon. Secure distributed top-k aggregation. In *Proceedings of IEEE International Conference on Communications (ICC)*, pages 804–809. IEEE, June 2012.
- [11] K. Palmskog. Verification of the Session Management Protocol. Master’s thesis, School of Computer Science and Communication, KTH Royal Institute of Technology, Nov. 2006.
- [12] K. Palmskog. *Towards Correct and Efficient Program Execution in Decentralized Networks: Programming Languages, Semantics, and Resource Management*. PhD thesis, School of Computer Science and Communication, KTH Royal Institute of Technology, Nov. 2014.
- [13] K. Palmskog, A. Celik, and M. Gligoric. piCoq: Parallel regression proving for large-scale verification projects. In *International Symposium on Software Testing and Analysis*, 2018. Accepted, to appear.
- [14] K. Palmskog, M. Dam, A. Lundblad, and A. Jafari. ABS-NET: Fully decentralized runtime adaptation for distributed objects. In M. Carbone, I. Lanese, A. Lluch Lafuente, and A. Sokolova, editors, *Proceedings 6th Interaction and Concurrency Experience*, Florence, Italy, 6th June 2013, volume 131 of *Electronic Proceedings in Theoretical Computer Science*, pages 85–100. Open Publishing Association, 2013.
- [15] K. Palmskog, A. Gonzalez Prieto, C. Meirosu, R. Stadler, and M. Dam. Scalable metadata-directed search in a network of information. In *Proceedings of Future Network & Mobile Summit*, pages 1–8. IEEE, June 2010.
- [16] K. Palmskog, F. Hariri, and D. Marinov. A case study on executing instrumented code in Java PathFinder. *SIGSOFT Softw. Eng. Notes*, 40(6):1–5, Nov. 2015.

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Recent Presentations

- 10/31/17 iCoq: Regression Proof Selection for Large-Scale Verification Projects. Presentation at International Conference on Automated Software Engineering (ASE)
- 10/30/17 Guest lecturer, CS524, The π -Calculus
- 10/25/17 Guest lecturer, CS524, Concurrent Processes and Bisimulation
- 10/23/17 Guest lecturer, CS524, Proofs by Induction
- 3/14/17 Guest lecturer, CS598, Stochastic computing
- 1/23/17 iCoq: Regression Proof Selection for Large-Scale Coq Projects. Invited presentation at University of Washington Proof Assistant User Group.
- 9/29/16 Guest lecturer, CS173, Intro to discrete structures: graph colorings
- 8/25/16 Guest lecturer, CS173, Intro to discrete structures: graph problems
- 8/23/16 Guest lecturer, CS173, Intro to discrete structures: course overview
- 11/9/15 A Case Study on Executing Instrumented Code in Java PathFinder. Presentation at Java PathFinder workshop (JPF 2015)
- 10/30/15 Guest lecturer, CS477, Temporal logic
- 10/27/15 Hybrid Inference of Semantics for Software Adaptation. Invited presentation at the 2nd Workshop on Software Engineering for Parallel Systems (SEPS 2015).
- 5/5/15 Guest lecturer, CS421, Logic Programming
- 5/1/15 Automatic Conversion of Shared-Memory Programs to the Message-Passing Model Using Dynamic Probabilistic Inference. Invited presentation at BBN Technologies.
- 4/29/15 Network-Oblivious Programmers, Network-Aware Program Execution. Invited presentations at MIT Computer Science and Artificial Intelligence Laboratory.

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Teaching Experience

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| Student supervision | UIUC | | Ongoing supervision of 5 undergraduate students and junior PhD students. |
| Concurrent Programming Languages | UIUC | CS524 | Guest lecturer. Development of exercises. |
| Programming Languages for Next Generation Applications | UIUC | CS598 | Guest lecturer. |
| Discrete Structures | UIUC | CS173 | Guest lecturer. |
| Formal Software Development Methods | UIUC | CS477 | Guest lecturer. |
| Logic for Computer Science | KTH | DD1350 | Held recitation classes. Gave lab assistance to students. Corrected written assignments and exams. Developed course material. |
| Program System Construction Using C++ | KTH | DD2387 | Held recitation classes. Gave lab assistance to students. Corrected exams. Developed course material. |
| Software Engineering | KTH | DD2385 | Held recitation classes. Gave lab assistance to students. Developed course material. |
| Network Security | KTH | DD2495 | Guest lecturer. Gave lab assistance to students. Developed course material. |
| Advanced Algorithms | KTH | DD2440 | Corrected written assignments. Conducted oral exams. |
| Algorithms, Data Structures and Complexity | KTH | DD1352 | Gave lab assistance to students. Conducted oral exams. |
| Compiler Construction | KTH | DD2488 | Conducted oral exams. |
| Numerical Methods | KTH | DN1240 | Gave lab assistance to students. |