Evgenii Kotelnikov, Ph.D.

Date of birth: 15 February 1990
Current location: Gothenburg, Sweden
Language proficiency: English (fluent), Russian (native), Swedish (intermediate)

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Main competences

Formal methods   Automated reasoning   Functional programming   Software verification   Databases   Cloud   C
C++   Java   Scala   Haskell   Python

Work experience

🔗 LinkedIn profile

Ericsson AB
Software developer
August 2019 to now 📅
Gothenburg, Sweden 📍
- Implement new features for the control plane of SGSN-MME.
- Develop the cloud infrastructure, including storage, networking and logging, for Packet Core Controller — Ericsson's 5G solution.

Linux   Erlang   C   Bash   Python   Kubernetes   Docker

Chalmers University of Technology
Doctoral researcher
September 2013 to September 2018 📅
Gothenburg, Sweden 📍
- Conducted research in the areas of automated theorem proving, formal methods and functional programming.
- Published and presented academic results in peer-reviewed conferences and workshops.
- Actively contributed to Vampire, a state-of-the-art automated theorem prover for first-order logic.
- Reviewed paper submission for SCSS 2014, FM 2015, LPAR-20, CPP 2016, CICM 2016, FM 2016, PSI-2017, TACAS 2018, FM 2018 and iFM 2018.
- Assisted to preparing assignments, conducting consultation sessions and grading exams in the following courses:
  - Databases (2014 📅, 2015 📅, 2016 📅, 2017 📅, 2018 📅)
  - Algorithms and Datastructures (2014 📅)
  - Functional Programming (2014 📅, 2015 📅, 2016 📅, 2017 📅, 2018 📅)
- Developed and maintained a homework submission system in the Computer Science department used annually by approx. 1000 students and 20 faculty members.

Java   Haskell   Python   PostgreSQL   Oracle Database

Amazon Web Services
Applied scientist intern
March 2017 to June 2017 📅
New York, USA 📍
Developed tools for static analysis of AWS virtual private cloud networks at the Automated Reasoning Group. Among these tools are Zelkova and Tiros.

Scala   Python   Datalog   Vampire   Z3

Yandex Inc.
Software developer
March 2011 to August 2013 📅
Saint-Petersburg, Russia 📍
- Developed the back end of high-load web search services, including an in-house performant database solution capable of serving up to 400 requests per second.
- Developed information retrieval tools and web crawlers.
- Developed an app recommendation system for Yandex.Store.

Java   Scala   Akka   Oracle Database   MongoDB   Redis

Motorola Solutions Inc.
Software engineering intern
July 2010 to December 2010 📅
Saint-Petersburg, Russia 📍
Designed a specification language for low-level telecom protocols and implemented a toolchain for it.

Lisp   C   Python   Wireshark

Freelance
Web developer
2005 to 2010 📅
Remote 📍
Developed front end and back end of commercial websites.

PHP   MySQL   HTML   CSS   JavaScript   jQuery

Education

Doctor of philosophy (Ph.D.)
September 2013 to September 2018 📅
Gothenburg, Sweden 📍
Chalmers University of Technology, Department of Computer Science
Thesis titled "Automated Theorem Proving with Extensions of First-Order Logic"
Ph.D. supervisors Laura Kovács and Andrei Voronkov
Explored ways to make automated theorem provers more efficient for applications by extending the logic they support. The applications include automation of proof assistants and static analysis of software and networks.

Automated theorem proving   First-order logic   Program analysis   Vampire

Master of science (M.Sc.)
September 2011 to July 2013 📅
Saint-Petersburg, Russia 📍
Saint-Petersburg State University, Department of Applied Mathematics
Thesis titled "Syntactical Extensions of Scala for Effectful Computations"

Scala   Metaprogramming   Monads   Computational effects

Bachelor of science (B.Sc.)
September 2007 to July 2011 📅
Saint-Petersburg, Russia 📍
Saint-Petersburg State University, Department of Applied Mathematics
Thesis titled "Source Code Generation Based on Language Grammar Description"

Source code generation   Context-free grammars   Algebraic data types   Scheme

Summer & winter schools
Marktoberdorf Summer School 2016: Dependable Software Systems Engineering
August 2016 📅
Summer School 2014: Verification Technology, Systems & Applications (VTSA'2014)
October 2014 📅
Advanced Winter School on Reasoning Engines for Rigorous System Engineering (ReRiSE'14)
February 2014 📅

Public software projects

🔗 GitHub profile

vampire
An award-winning automated theorem prover for first-order logic.
C++   175 KLOC

voogie
A verification conditions generator for the Boogie intermediate verification language.
Haskell   2 KLOC

scala-workflow
An extension to Scala for boilerplate-free syntax for effectful computations.
Scala   1.5 KLOC

atomizer
A static analysis tool for finding loose atoms in large Erlang code bases.
Erlang   1.4 KLOC

atp
Haskell interface to automated theorem provers.
Haskell   1.7 KLOC

fire
A submission system for homework assignments.
Python   HTML   CoffeeScript   Docker   30 KLOC

List of publications

🔗 Google Scholar profile

Reachability Analysis for AWS-based Networks
2019 📅
A. Gacek, J. Backes, B. Cook, N. Rungta, S. Bayless, C. Dodge, C. Varming, A.J. Hu, B. Kocik, E. Kotelnikov, J. Kukovec, S. McLaughlin, J. Reed, J. Sizemore, M. Stalzer, P. Srinivasan, P. Subotic, B. Whaley, Y. Wu and T. Kahsai
Proceedings of the 31st International Conference On Computer Aided Verification

TFX: The TPTP Extended Typed First-order Form
2018 📅
G. Sutcliffe and E. Kotelnikov
Proceedings of the 6th Workshop on Practical Aspects of Automated Reasoning

A FOOLish Encoding of the Next State Relations of Imperative Programs
2018 📅
E. Kotelnikov, L. Kovács and A. Voronkov
Proceedings of the 9th International Joint Conference on Automated Reasoning

A Clausal Normal Form Translation for FOOL
2016 📅
E. Kotelnikov, L. Kovács, M. Suda and A. Voronkov
Proceedings of the 2nd Global Conference on Artificial Intelligence

The Vampire and the FOOL
2016 📅
E. Kotelnikov, L. Kovács, G. Reger and A. Voronkov
Proceedings of the 5th ACM SIGPLAN Conference on Certified Programs and Proofs

A First Class Boolean Sort in First-Order Theorem Proving and TPTP
2015 📅
E. Kotelnikov, L. Kovács and A. Voronkov
Conferences on Intelligent Computer Mathematics

Type-Directed Language Extension for Effectful Computations
2014 📅
E. Kotelnikov
Proceedings of the Fifth Annual Scala Workshop

Embeddable Framework for Syntax-Safe Source Code Generation
2012 📅
E. Kotelnikov
Proceedings of the 2012 Joint International Conference on Human-Centered Computer Environments