

Contact information

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1 Education and Qualifications

- Ph.D. in Computer Science, **KU Leuven**, Leuven, Belgium. **November 2008–November 2012**.
Thesis: *Operational Aspects of Type Systems*, Advisor: [Dave Clarke](#)
- M.Sc. in Mathematics and Computer Science, GPA 5.0/5.0, **Saint Petersburg State University**, Saint Petersburg, Russia. **September 2003–June 2008**.
Thesis: *Extraction of Musical Notation from a Musical Signal*, Advisor: Andrey E. Barabanov

2 Employment History

- **Yale-NUS College** and **School of Computing, National University of Singapore**, Singapore
 - *Associate Professor* (Non-tenured, on Tenure Track), **August 2019–present**.
75% appointment at Yale-NUS College, 25% appointment at NUS SoC
 - *Associate Professor* (Non-tenured, on Tenure Track), **November 2018–July 2019**.
Full-time appointment at Yale-NUS College, 0% courtesy appointment at NUS SoC
- **University College London**, Department of Computer Science. London, UK
 - *Associate Professor*. **Effective 1 October 2018, honorary position since 1 November 2018**.
 - *Lecturer (Assistant Professor)*. **November 2015–September 2018**.
- **Facebook, Inc.**, Static Analysis Tools. London, UK
Research Scientist (Part-Time Contingent Worker). **November 2017–July 2018**.
- **IMDEA Software Institute**, Madrid, Spain
Post-doctoral Researcher. **February 2013–October 2015**.
- **Microsoft Research**, Cambridge, UK
Research Intern. **Programming Principles and Tools** group. **July–September 2012**.
- **JetBrains Inc.**, Saint Petersburg, Russia
Software Engineer. **IntelliJ IDEA** team. **September 2006–November 2008**.
- **OpenWay**, Saint Petersburg, Russia
Summer School Intern. **June 2006–September 2006**.
- **Informational Systems for Business**, Saint Petersburg, Russia
Software Engineer. **August 2005–June 2006**.

3 Publications and Selected Manuscripts

Journal articles

This section includes papers published since 2017 in Proceedings of the ACM in Programming Languages (PACMPL) for the top-tier conferences in programming languages: POPL, OOPSLA, and ICFP.

J1 Protocol Combinators for Modeling, Testing, and Execution of Distributed Systems

Kristoffer Just Arndal Andersen and Ilya Sergey

Accepted for publication in *Journal of Functional Programming*. To appear in 2021.

J2 Safer Smart Contract Programming with SCILLA

Ilya Sergey, Vaivaswatha Nagaraj, Jacob Johannsen, Amrit Kumar, Anton Trunov, Ken Chan.

In *Proc. ACM Program. Lang. (OOPSLA 2019) (A*)*, 73/201 \approx 36% accepted.

Recipient of OOPSLA 2019 Distinguished Artifact Award

<https://doi.org/10.1145/3360611>

- J3 QED at Large: A Survey of Engineering of Formally Verified Software**
Talia Ringer, Karl Palmskog, Ilya Sergey, Milos Gligoric, and Zachary Tatlock
Foundations and Trends in Programming Languages, Volume 5, Issue 2-3, September 2019.
<https://doi.org/10.1561/25000000045>
- J4 Structuring the Synthesis of Heap-Manipulating Programs**
Nadia Polikarpova and Ilya Sergey.
In *Proc. ACM Program. Lang. (POPL 2019) (A*)*, 77/269 \approx 29% accepted.
Recipient of POPL 2019 Distinguished Paper Award
<https://doi.org/10.1145/3290385>
- J5 A True Positives Theorem for a Static Race Detector**
Nikos Gorogiannis, Peter O’Hearn, and Ilya Sergey.
In *Proc. ACM Program. Lang. (POPL 2019) (A*)*, 77/269 \approx 29% accepted.
<https://doi.org/10.1145/3290370>
- J6 RacerD: Compositional Static Race Detection**
Sam Blackshear, Nikos Gorogiannis, Peter O’Hearn, and Ilya Sergey.
In *Proc. ACM Program. Lang. (OOPSLA 2018) (A*)*, 60/216 \approx 28% accepted.
<https://doi.org/10.1145/3276514>
- J7 Programming and Proving with Distributed Protocols**
Ilya Sergey, James R. Wilcox, and Zachary Tatlock.
In *Proc. ACM Program. Lang. (POPL 2018) (A*)*, 66/271 \approx 24% accepted.
<https://doi.org/10.1145/3158116>
- J8 Modular, Higher-Order Cardinality Analysis in Theory and Practice**
Ilya Sergey, Dimitrios Vytiniotis, Joachim Breitner and Simon Peyton Jones
Journal of Functional Programming, volume 27, e11, January 2017.
<https://doi.org/10.1017/S0956796817000016>
- J9 Pushdown Flow Analysis with Abstract Garbage Collection**
J. Ian Johnson, Ilya Sergey, Christopher Earl, Matthew Might and David Van Horn
Journal of Functional Programming, volume 24, issue 2-3, pages 218–283, May 2014.
<https://doi.org/10.1017/S0956796817000016>
- J10 A correspondence between type checking via reduction and type checking via evaluation**
Ilya Sergey and Dave Clarke
Information Processing Letters, volume 112, issue 1-2, pages 13–20, January 2012.
<https://doi.org/10.1016/j.ipl.2011.10.008>

Articles in international conference proceedings

CORE2018 Ranking System Summary: A* - 4%, A - 14%, B - 26%, C - 49%, Other - 7%.

- C1 Automated Repair of Heap-Manipulating Programs using Deductive Synthesis**
Thanh-Toan Nguyen, Quang-Trung Ta, Ilya Sergey, and Wei-Ngan Chin
In *VMCAI 2021 (B)*, 22/48 \approx 46% accepted.
- C2 Certifying Certainty and Uncertainty in Approximate Membership Query Structures**
Kiran Gopinathan and Ilya Sergey.
In *CAV 2020 (A*)*, 66/241 \approx 27% accepted.
https://doi.org/10.1007/978-3-030-53291-8_16
- C3 Concise Read-Only Specifications for Better Synthesis of Programs with Pointers**
Andreea Costea, Amy Zhu, Nadia Polikarpova, and Ilya Sergey.
In *ESOP 2020 (A)*, 27/87 \approx 31% accepted.
https://doi.org/10.1007/978-3-030-44914-8_6
- C4 Running on Fumes: Preventing Out-of-Gas Vulnerabilities in Ethereum Smart Contracts using Static Resource Analysis**
Elvira Albert, Pablo Gordillo, Albert Rubio, and Ilya Sergey.

In VECoS 2019, 8/13 \approx 61% accepted.

https://doi.org/10.1007/978-3-030-35092-5_5

C5 Exploiting The Laws of Order in Smart Contracts

Aashish Kolluri, Ivica Nikolić, Ilya Sergey, Aquinas Hobor, and Prateek Saxena.

In ISSTA 2019 (A), 29/142 \approx 20% accepted.

<https://doi.org/10.1145/3293882.3330560>

C6 Distributed Protocol Combinators

Kristoffer Just Arndal Andersen and Ilya Sergey.

In PADL 2019 (B), 14/35 = 40% accepted.

https://doi.org/10.1007/978-3-030-05998-9_11

C7 Finding the Greedy, Prodigal, and Suicidal Contracts at Scale

Ivica Nikolić, Aashish Kolluri, Ilya Sergey, Prateek Saxena, and Aquinas Hobor.

In ACSAC 2018 (A), 60/299 \approx 20% accepted.

<https://doi.org/10.1145/3274694.3274743>

C8 ETHIR: A Framework for High-Level Analysis of Ethereum Bytecode

Elvira Albert, Pablo Gordillo, Benjamin Livshits, Albert Rubio, and Ilya Sergey.

In ATVA 2018 (A), 33/82 \approx 40% accepted.

https://doi.org/10.1007/978-3-030-01090-4_30

C9 Paxos Consensus, Deconstructed and Abstracted

Álvaro García Pérez, Alexey Gotsman, Yuri Meshman and Ilya Sergey.

In ESOP 2018 (A), 36/114 \approx 32% accepted.

https://doi.org/10.1007/978-3-319-89884-1_32

C10 Mechanising Blockchain Consensus

George Pirlea and Ilya Sergey.

In CPP 2018, 22/51 \approx 43% accepted.

<https://doi.org/10.1145/3167086>

C11 Concurrent Data Structures Linked in Time

Germán Andrés Delbianco, Ilya Sergey, Aleksandar Nanevski and Anindya Banerjee.

In ECOOP 2017 (A), 27/81 \approx 33% accepted. <https://doi.org/10.4230/LIPIcs.ECOOP.2017.8>

C12 Programming Language Abstractions for Modularly Verified Distributed Systems

James R. Wilcox, Ilya Sergey and Zachary Tatlock. In SNAPL 2017.

<https://doi.org/10.4230/LIPIcs.SNAPL.2017.19>

C13 Hoare-style Specifications as Correctness Conditions for Non-linearizable Concurrent Objects

Ilya Sergey, Aleksandar Nanevski, Anindya Banerjee and Germán Andrés Delbianco.

In OOPSLA 2016 (A*), 52/203 \approx 26% accepted.

<https://doi.org/10.1145/2983990.2983999>

C14 Experience Report: Growing and Shrinking Polygons for Random Testing of Computational Geometry Algorithms

Ilya Sergey.

In ICFP 2016 (A*), 37/118 \approx 31% accepted.

<https://doi.org/10.1145/2951913.2951927>

C15 Mechanized Verification of Fine-grained Concurrent Programs

Ilya Sergey, Aleksandar Nanevski and Anindya Banerjee.

In PLDI 2015 (A*), 58/303 \approx 19% accepted.

<https://doi.org/10.1145/2737924.2737964>

C16 Specifying and Verifying Concurrent Algorithms with Histories and Subjectivity

Ilya Sergey, Aleksandar Nanevski and Anindya Banerjee.

In ESOP 2015 (A), 33/115 \approx 29% accepted.

https://doi.org/10.1007/978-3-662-46669-8_14

C17 Communicating State Transition Systems for Fine-Grained Concurrent Resources

Aleksandar Nanevski, Ruy Ley-Wild, Ilya Sergey and Germán Andrés Delbianco.

In **ESOP 2014 (A)**, 27/109 \approx 25% accepted.
https://doi.org/10.1007/978-3-642-54833-8_16

C18 Modular, Higher-Order Cardinality Analysis in Theory and Practice

Ilya Sergey, Dimitrios Vytiniotis and Simon Peyton Jones.
In **POPL 2014 (A*)**, 51/220 \approx 23% accepted.
<https://doi.org/10.1145/2535838.2535861>

C19 Monadic Abstract Interpreters

Ilya Sergey, Dominique Devriese, Matthew Might, Jan Midtgaard, David Darais, Dave Clarke and Frank Piessens.
In **PLDI 2013 (A*)**, 46/267 \approx 17% accepted.
<https://doi.org/10.1145/2491956.2491979>

C20 Introspective Pushdown Analysis of Higher-Order Programs

Christopher Earl, Ilya Sergey, Matthew Might and David Van Horn.
In **ICFP 2012 (A*)**, 32/88 \approx 36% accepted.
<https://doi.org/10.1145/2364527.2364576>

C21 Calculating Graph Algorithms for Dominance and Shortest Path

Ilya Sergey, Jan Midtgaard and Dave Clarke.
In **MPC 2012 (B)**, 13/27 \approx 48% accepted.
https://doi.org/10.1007/978-3-642-31113-0_8

C22 Gradual Ownership Types

Ilya Sergey and Dave Clarke.
In **ESOP 2012 (A)**, 28/88 \approx 32% accepted.
https://doi.org/10.1007/978-3-642-28869-2_29

Peer-reviewed articles in international workshop proceedings

W1 Towards Mechanising Probabilistic Properties of a Blockchain

Kiran Gopinathan and Ilya Sergey. In **CoqPL 2019**.

W2 A Concurrent Perspective on Smart Contracts

Ilya Sergey and Aquinas Hobor. *1st Workshop on Trusted Smart Contracts (WTSC 2017)*
https://doi.org/10.1007/978-3-319-70278-0_30

W3 Deriving Interpretations of the Gradually-Typed Lambda Calculus

Álvaro García Pérez, Pablo Nogueira and Ilya Sergey. In **PEPM 2014**.
<https://doi.org/10.1145/2543728.2543742>

W4 Fixing Idioms – A recursion primitive for applicative DSLs

Dominique Devriese, Ilya Sergey, Dave Clarke and Frank Piessens. In **PEPM 2013**.
<https://doi.org/10.1145/2426890.2426910>

W5 From type checking by recursive descent to type checking with an abstract machine

Ilya Sergey and Dave Clarke. In **LDTA 2011**.
<https://doi.org/10.1145/1988783.1988785>

W6 Automatic refactorings for Scala programs

Ilya Sergey, Dave Clarke and Alexander Podkhalyuzin
The First Scala Workshop – Scala Days 2010

W7 A semantics for context-oriented programming with layers

Dave Clarke and Ilya Sergey. In **COP 2009**.
<https://doi.org/10.1145/1562112.1562122>

Invited articles

I1 Temporal Properties of Smart Contracts

Ilya Sergey, Amrit Kumar and Aquinas Hobor. In **ISOLA 2018**, The track on *Reliable Smart Contracts*.
https://doi.org/10.1007/978-3-030-03427-6_25

Technical Reports and Software Specifications

T1 **Compiling a Higher-Order Smart Contract Language to LLVM**

Vaivaswatha Nagaraj, Jacob Johannsen, Anton Trunov, George Pîrlea, Amrit Kumar, and Ilya Sergey.
Extended talk abstract, accepted to the *2020 Virtual LLVM Developers' Meeting (LLVM 2020)*.
<https://arxiv.org/abs/2008.05555>

T2 **SCILLA: a Smart Contract Intermediate-Level Language**

Ilya Sergey, Amrit Kumar and Aquinas Hobor.
<http://arxiv.org/abs/1801.00687>

T3 **Operational Aspects of C/C++ Concurrency**

Anton Podkopaev, Ilya Sergey and Aleksandar Nanevski.
<http://arxiv.org/abs/1606.01400>

Monographs

M1 **Programs and Proofs: Mechanizing Mathematics with Dependent Types**

Ilya Sergey. 2014. *Lecture notes with exercises*, available at <http://ilyasergey.net/pnp>.

Book chapters

B1 **Ownership Types: A Survey**

Dave Clarke, Johan Östlund, Ilya Sergey and Tobias Wrigstad.
Aliasing in Object-Oriented Programming: Types, Analysis and Verification, Springer, 2013.
https://doi.org/10.1007/978-3-642-36946-9_3

4 Grants and External Research Funding

Funding attracted to Yale-NUS College/NUS (including transferred grants): \approx 729,000 SGD.

Cumulative funding obtained to date: \approx 1,004,000 SGD.

Date	Funding body, project title and duration	Amount
03/2020	Facebook grant on the project <i>Logical Separation of Move Smart Contract State</i> , unrestricted gift (PI)	75,000 USD
09/2019	A grant of Singapore NRF National Satellite of Excellence in Trustworthy Software Systems on the project <i>CertiChain: A Framework for Mechanically Verifying Blockchain Consensus Protocols</i> , 2.5 years (PI)	218,790 SGD
06/2019	Singapore MOE Tier 1 grant on the project <i>Scalable Deductive Synthesis of Thread-Safe Concurrency</i> , 2 years (PI)	172,548 SGD
11/2018	Grant of NUS Crystal Centre, 3 years (Co-PI).	150,000 SGD
02/2018	Google Faculty Research Award 2017, 152/1033 \approx 15% acceptance rate. <i>Distributed System Optimizations as Network Semantics Transformations</i> (PI)	59,925 USD
08/2017	Grant of Research Institute in Verified Trustworthy Software Systems (VeTSS) on the project <i>Automated Reasoning with Fine-Grained Concurrent Collections</i> , 8 month (PI)	55,561 GBP
09/2016	EPSRC First Grant. <i>Program Logics for Compositional Specification and Verification of Distributed Systems</i> , 1.5 years (PI)	101,009 GBP

5 Awards and Fellowships

- **Recipient of the AITO Dahl-Nygaard Junior Prize for 2019.**
- **OOPSLA 2019 Distinguished Artefact Award**
for the work *Safer Smart Contract Programming with Scilla* [J2], jointly with Vaivaswatha Nagaraj, Jacob Johannsen, Amrit Kumar, Anton Trunov, and Ken Chan Guan Hao.

- **POPL 2019 Distinguished Paper Award**
for the work *Structuring the Synthesis of Heap-Manipulating Programs* [J4], jointly with Nadia Polikarpova.
- **Google Faculty Research Award** recipient (2017). Google Inc.
- **Fellow** of the UK Higher Education Academy (2017).
- **Vladimir Potanin Fund Scholarship** recipient (2004, 2005, 2007).
The Vladimir Potanin Foundation.

6 Keynote Talks at Conferences and Workshops

International Events

1. **October 2019.** *1st Workshop on Formal Methods for Blockchains (FMBC 2019)*, Porto, Portugal.
Talk title: *The Scilla Journey: From Proof General to Thousands of Nodes* .
2. **August 2019.** *The 2019 ACM Symposium on Principles of Distributed Computing (PODC 2019)*.
Toronto, Canada. Talk title: *Engineering Distributed Systems that We Can Trust (and Also Run)*
<https://doi.org/10.1145/3293611.3338839>
3. **July 2019.** *33rd European Conference on Object-Oriented Programming (ECOOP 2019)*, London, UK.
Talk title: *Composing Distributed Systems that are Provably Correct*
4. **September 2013.** *15th International Symposium on Principles and Practice of Declarative Programming (PPDP 2013)*, Madrid, Spain. Talk title: *Monadic Abstract Interpreters*

National Events

1. **November 2020.** *XI Workshop Program Semantics, Specification and Verification: Theory and Applications*
A.P. Ershov Institute of Informatics Systems, Russia.
<https://persons.iis.nsk.su/en/pssv2020>
Talk title: *Structuring the Synthesis of Heap-Manipulating Programs*
2. **September 2020.** *The 4th Working Formal Methods Symposium* (Virtual)
Faculty of Mathematics and Computer Science, Babes-Bolyai University, Romania.
<http://www.cs.ubbcluj.ro/from2020/>
Talk title: *Structuring the Synthesis of Heap-Manipulating Programs*
3. **April 2017.** *Russian National Conference on Programming Languages and Compilers*
Rostov-on-Don, Russia. <http://plc.sfedu.ru>
Talk title: *Dependent Types for Verification of Real-World Programs*

7 Advisory Appointments and Knowledge Transfer

- **Zilliqa Inc**, Singapore.
Research Advisor and Lead Language Designer. March 2018–present.

8 Teaching

Teaching at Yale-NUS College

* designed new syllabus

Semester	Course	Role	# Students
Autumn 2020	YSC3248 Parallel, Concurrent and Distributed Programming	Lecturer*	12
Autumn 2020	YSC3208 Programming Language Design and Implementation	Lecturer	16
Spring 2020	YSC2229 Introductory Data Structures and Algorithms	Lecturer*	14
Autumn 2019	YSC3248 Parallel, Concurrent and Distributed Programming	Lecturer*	10
Autumn 2019	YSC1122 Quantitative Reasoning	Lecturer	24
Spring 2019	YSC2229 Introductory Data Structures and Algorithms	Lecturer*	14

Teaching at University College London

Semester	Course	Role	# Students
Spring 2018	ENGS102P Design and Professional Skills	Lecturer, Project Facilitator	147
Spring 2018	COMP104P Theory 2, Analysis of Algorithms	Lecturer	172
Autumn 2017	COMP214P Systems Engineering	Scenario Project Designer*	116
Spring 2017	COMP104P Theory 2, Analysis of Algorithms	Lecturer	142
Spring 2017	COMP203P Software Engineering and HCI	Scenario Project Designer*	124
Spring 2016	COMP104P Theory 2, Analysis of Algorithms	Lecturer	155
Spring 2016	COMP203P Software Engineering and HCI	Scenario Project Designer*	84
Spring 2016	COMP2012 Directed Reading	Second Examiner	11

Teaching at KU Leuven

† estimated number

Semester	Course	Role	# Students
Autumn 2011	B-KUL-H04L5A Comparative Programming Languages	TA	20 [†]
Autumn 2010	B-KUL-H04H8B Formal systems and their applications	TA, Guest Lecturer	15 [†]
Autumn 2009	B-KUL-H04H8B Formal systems and their applications	TA, Guest Lecturer	15 [†]

Teaching at Graduate Summer/Winter Schools

- **SIGPL Summer School 2018**, August 2018, Dongguk University, Seoul, Korea.
Summer School Lecturer (gave 3 lectures on distributed systems).
- **Programs and Proofs: Mechanizing Mathematics with Dependent Types**, August 2014, Saint Petersburg State University, Saint Petersburg, Russia.
Course Designer, Summer School Lecturer (5-day course).

9 Academic Supervision

PhD students

- **George Pirlea**, PhD student, NUS. Since August 2020.
- **Yunjeong Lee**, PhD student, NUS. Since August 2020.
- **Kiran Gopinathan**, PhD student, NUS. Since August 2019.
- **Maria A Schett**, PhD student, UCL. November 2017–May 2019.

Postdocs

- **Yutaka Nagashima**, Research Associate, NUS SoC. December 2020–present.
- **Thomas Sibut-Pinote**, Research Associate, UCL. November 2017–August 2018.

Undergraduate and MSc advisees

- **Nicholas Chin Jian Wei**, Capstone student at Yale-NUS College, 2020/21.
- **Tram Hoang Ngoc**, Capstone student at Yale-NUS College, 2020/21.
- **Alaukik Nath Pant**, Capstone student at Yale-NUS College, 2020/21.
- **Gabriel Phoenix Petrov**, Capstone student at Yale-NUS College, 2020/21.
- **Bryan Tan Yao Hong**, Capstone student at Yale-NUS College, 2020/21.
- **Yasunari Watanabe**, Capstone student at Yale-NUS College, 2019/20.
Capstone Thesis: *Building a Certified Program Synthesizer*.
Recipient of the Outstanding Yale-NUS Capstone Prize for 2020.
- **Daniel Lok Yu-Kin**, Capstone student at Yale-NUS College, 2018/19.
Capstone Thesis: *Modelling and Testing Composite Byzantine-Fault Tolerant Consensus Protocols*.
- **Jake (Si Yuan) Goh**, Capstone student at Yale-NUS College, 2018/19.
Capstone Thesis: *Synchronisation Primitives for Smart Contracts*.
- **George Pirlea**, MEng student at UCL, 2018/19.
MEng Thesis: *Toychain: Formally Verified Blockchain Consensus*.

- **Anirudh Pillai**, BSc student at UCL, 2017/18.
Final Year Thesis: *Mechanised Verification of Paxos-like Consensus Protocols*.

Interns and Research Visitors

- **Irina Artemeva**, Intern at NUS SoC, September 2020–December 2020.
- **Yasunari Watanabe**, Intern at NUS SoC, May 2020–August 2020.
Topic: Certifying Automated Synthesis of Heap-Manipulating Programs
- **Amy Zhu** (undergrad at UBC), Intern at Yale-NUS College/NUS SoC, May–August 2019.
Topic: Deductive Synthesis with Read-Only Annotations; conference paper: [C3].
- **Bryan Tan**, Intern at Zilliqa, May–August 2019.
Topic: Compiling Scilla to SMT constraints
- **Kristoffer Just Andersen** (Aarhus U.), Visiting PhD Researcher at UCL, January–June 2018.
Topic: Practical programming with distributed protocols; papers: [C6, J1].
- **Kiran Gopinathan**, Intern at UCL, Summer 2018.
Topic: Probabilistic reasoning about blockchain protocols; workshop paper: [W1].
- **Oscar King**, Intern at UCL, Summer 2018.
Topic: Extraction for verified blockchain protocols.
- **George Pirlea**, Intern at UCL, Summer 2017.
Topic: Verification of blockchain consensus protocols in Coq; conference paper: [C10].
- **Benedict Loh**, Intern at UCL, Summer 2017.
Topic: Implementing a program synthesis engine, based on Separation Logic.
- **Georgi Georgiev**, Intern at UCL, Summer 2016.
Topic: Verification of a concurrent garbage collector in the Coq proof assistant.
- **Anton Podkopaev**, Intern at IMDEA Software Institute (main supervisor: Aleks Nanevski), 2015.
Topic: Operational semantics for C/C++11 concurrency; technical report: [T3].

10 Service to the Research Community

Large-Scale Event Organiser

- [ICFP Programming Contest 2019](https://icfpcontest2019.github.io), *Organiser*.
<https://icfpcontest2019.github.io>
The contest took place on June 21-24, 2019. 194 teams from 25 countries have participated.

International Conference Chair

- [31st European Symposium on Programming \(ESOP 2022\)](#)
Programme Committee Chair

Workshop Chair/Organiser

- [The Fifth International Workshop on Coq for Programming Languages \(CoqPL 2019\)](#)
January 2019, Lisbon, Portugal.
Co-chair (with Robbert Krebbers)
- [The Fourth International Workshop on Coq for Programming Languages \(CoqPL 2018\)](#)
January 2018, Los Angeles, CA, USA.
Co-chair (with Yves Bertot)
- [6th South of England Regional Programming Language Seminar \(S-REPLS 6\)](#)
May 2017, London, UK. Event web page: <http://srepls6.cs.ucl.ac.uk>.
Organiser.
The meeting has attracted speakers from 10 institutions from France, New Zealand, Singapore, UK, USA, and has been attended by approximately 90 researchers, students, and industry practitioners.

PhD Examiner

- Marco Vassena. Chalmers University of Technology, Sweden, February 2019.
Thesis: *Verifying Information Flow Control Libraries*
- Morten Krogh-Jespersen. Aarhus University, Denmark, December 2018
Thesis: *Towards Modular Reasoning for Stateful and Concurrent Programs.*

Member of Editorial Boards

- [The Journal of Financial Technology](#), May 2018 – present.

Programme Committee Member for International Conferences

PC – Programme Committee, EPC – External Programme Committee

- DISC 2021: *35th International Symposium on DIStributed Computing* (PC)
- CPP 2021: *10th ACM SIGPLAN International Conference on Certified Programs and Proofs* (PC)
- VMCAI 2021: *22nd Conference on Verification, Model Checking, and Abstract Interpretation* (PC)
- APLAS 2020: *18th Asian Symposium on Programming Languages and Systems* (PC)
- PLDI 2020: *41st ACM SIGPLAN Conf. on Programming Language Design and Implementation* (EPC)
- FLOPS 2020: *15th International Symposium on Functional and Logic Programming* (PC)
- ESOP 2020: *29th European Symposium on Programming* (PC)
- CPP 2020: *9th ACM SIGPLAN International Conference on Certified Programs and Proofs* (PC)
- PLDI 2019: *40th ACM SIGPLAN Conf. on Programming Language Design and Implementation* (PC)
- ECOOP 2019: *33rd European Conference on Object-Oriented Programming* (PC)
- Tokenomics 2019: *International Conference on Blockchain Economics, Security and Protocols* (PC)
- POPL 2019: *46th ACM SIGPLAN Symposium on Principles of Programming Languages* (PC)
- APLAS 2018: *16th Asian Symposium on Programming Languages and Systems* (PC)
- ICFP 2018: *23rd ACM SIGPLAN International Conference on Functional Programming* (PC)
- APLAS 2017: *15th Asian Symposium on Programming Languages and Systems* (PC)
- Scala 2017: *Scala Symposium 2017* (PC)
- SAS 2017: *24th Static Analysis Symposium* (PC)
- POPL 2017: *44th ACM SIGPLAN Symposium on Principles of Programming Languages* (PC)
- TMPA 2017: *4th International Conference on Tools And Methods of Program Analysis* (PC)
- Scala 2016: *Scala Symposium 2016* (PC)
- ESOP 2016: *25th European Symposium on Programming* (PC)
- SEIM 2016: *1st Russian Conference on Software Engineering and Information Management* (PC)
- PPDP 2014: *16th International Symp. on Principles and Practice of Declarative Programming* (PC)

PC Member for International Workshops

- PriSC 2021: *Workshop on Principles of Secure Compilation 2021*
- miniKanren 2020: *miniKanren and Relational Programming Workshop 2020*
- FMBC 2020: *2nd Workshop on Formal Methods for Blockchains*
- Coq 2019: *The Coq Workshop 2019*
- PEPM 2019: *ACM SIGPLAN 2019 Workshop on Partial Evaluation and Program Manipulation*
- HOPE 2018: *The 6th ACM SIGPLAN Workshop on Higher-Order Programming with Effects*
- WTSC 2018: *2nd Workshop on Trusted Smart Contracts*
- WTSC 2017: *1st Workshop on Trusted Smart Contracts*
- PEPM 2017: *ACM SIGPLAN 2017 Workshop on Partial Evaluation and Program Manipulation*
- TAPAS 2016: *The Seventh Workshop on Tools for Automatic Program Analysis*
- STOP 2015: *International Workshop on Scripts to Programs*
- Scala 2014: *The Fifth Annual Scala Workshop*

Reviewing for Journals

- [ACM Computing Surveys](#) (2019)
- [Science of Computer Programming \(SCP\)](#) (2019 × 2)

- [Journal of Automated Reasoning \(JAR\)](#) (2017)
- [ACM Transactions on Programming Languages and Systems \(TOPLAS\)](#) (2014, 2015 × 2, 2016, 2017)
- [Philosophical Transactions of the Royal Society of London](#) (2017),
- [Journal of Functional Programming \(JFP\)](#) (2015)
- [Formal Aspects of Computing](#) (2015).

Additional Conference and Workshop Refereeing

[OOPSLA 2020](#), [CONCUR 2020](#), [S&P \(Oakland\) 2020](#), [CONCUR 2018](#), [ECOOP 2018](#), [ISSTA 2018](#), [ICALP 2018](#), [PLDI 2018](#), [S&P \(Oakland\) 2018](#), [TYPES 2017 \(Post-proceedings\)](#), [PLDI 2017](#), [TACAS 2017](#), [ESOP 2017](#), [ATVA 2016](#), [CONCUR 2016](#), [DISC 2015](#), [ECOOP 2015](#), [ESOP 2015](#), [POPL 2015](#), [GPCE 2014](#), [ICFP 2014](#), [CSF 2014](#), [PROLE 2013](#), [CC 2013](#), [ESOP 2013](#), [POPL 2013](#), [CPP 2012](#), [ECOOP 2012](#), [NFM 2012](#), [ESOP 2012](#), [DSL 2011](#), [IWACO 2011](#), [Coordination 2010](#), [Coordination 2009](#).

Other Service

- *Publicity Chair* for the [International Conference on Functional Programming \(ICFP\)](#) in 2022–2024.
- [POPL 2021](#)
 - Social Co-Chair (for the Asia-Pacific time band)
 - Student Research Competition, *Selection Committee member*
- Contributor to the [SIGPLAN PL Perspectives](#) blog (<https://blog.sigplan.org>):
 - “[Composition in Distributed Systems](#)”, December 23, 2019.
 - “[What Does It Mean for a Program Analysis to Be Sound?](#)”, August 7, 2019.
- [Programming Languages Mentoring Workshop 2019 \(PLMW 2019\) @ ICFP 2019](#), *Speaker* on the topic “[Functional Programming is Everywhere](#)”
- [Programming Languages Mentoring Workshop 2019 \(PLMW 2019\) @ POPL 2019](#), *Speaker* on the topic “[Research Skills: How to Bootstrap a Research Project](#)”
- Social Track at [ICFP 2020](#), *Panellist*
- [PLDI 2019](#), Student Research Competition, *Selection Committee member*
- [SPLASH 2017 Workshops](#), *Workshop Program Committee member*
- [ICFP 2017](#), September 2017, Oxford, UK. *Student Research Competition Chair*
- [ICFP 2016](#), Student Research Competition, *Selection Committee member*
- [Programming Languages Mentoring Workshop at POPL 2016](#), *Panellist*
- [ECOOP 2014](#), *Artifact Evaluation Committee member*

11 Appearances in Press

Online media

- **Scilla – A Formal Verification Oriented Contract Language**
Epicenter, video interview. 6 June 2018. <https://epicenter.tv/episode/238/>
- **Security Vulnerabilities in Smart Contracts**
Schneier on Security. By Bruce Schneier, 6 March 2018.
https://www.schneier.com/blog/archives/2018/03/security_vulner_13.html
- **Ethereum’s smart contracts are full of holes**
MIT Technology Review. By Mike Orcutt, 1 March 2018.
<https://www.technologyreview.com/s/610392/ethereums-smart-contracts-are-full-of-holes/>
- **Millions of Dollars In Ethereum Are Vulnerable to Hackers Right Now**
Motherboard, Vice. By Jordan Pearson, 22 February 2018. <https://goo.gl/Z68sbr>

12 Selected Invited Seminar Presentations and Technical Talks

- **Practical Smart Contract Sharding with Static Program Analysis**
Purdue University, IN, US (September 2020, virtually)

- **The Scilla Journey: From Proof General to Thousands of Nodes**
1st Workshop on Formal Methods for Blockchains, Invited keynote talk, Porto, Portugal (October 2019).
- **Engineering Distributed Systems that We Can Trust (and Also Run)**
PODC 2019, Invited keynote talk, Toronto, Canada (August 2019).
- **Composing Software Systems that are Provably Correct**
ECOOP 2019, Dahl-Nygaard prize keynote talk, London, UK (July 2019).
- **Compositional Static Race Detection at Scale, without False Positives**
JetBrains, St Petersburg, Russia (July 2019); National University of Singapore (April 2019).
- **What We Talk about When We Talk about Formally Verified Systems**
Blockchain and Cybersecurity Workshop at NUS (November 2018).
- **Deductive Synthesis of Programs that Alter Data Structures**
Aarhus University, Denmark (December 2018); National University of Singapore (November 2018); Imperial College London, UK (October 2018); KU Leuven, Belgium (September 2018); Inria Paris, France (September 2018); KAIST, Daejeon, Korea (August 2018).
- **Scilla: Foundations for Verifiable Decentralised Computations on a Blockchain**
The Blockchain Connector, London Blockchain Developer Meetup, London, UK (May 2018); PLEMM 2018: Programming Language Enthusiasts Mind Melt, Bellevue, WA, US (May 2018); University of California San Diego, CA, US (May 2018).
- **Mechanising Blockchain Consensus**
University of Utah, UT, US (May 2018).
- **Programming and Proving with Distributed Protocols**
University Paris Diderot – Paris 7, France (April 2018); Microsoft Research, Cambridge, UK (November 2017); National University of Singapore (October 2017); Heriot-Watt University, UK (July 2017); IMDEA Software Institute, Spain (June 2017); Aarhus University, Denmark (May 2017); University of California San Diego, CA, US (May 2017); Imperial College London, UK (November 2016).
- **Guarding a Gallery with Sleepy Robots**
Yale-NUS College, Singapore (October 2017); University of California San Diego, CA, US (Feb 2019).
- **Programming and Proving with Concurrent Resources**
University of York, UK (October 2016); University of Cambridge, UK (June 2016); Aarhus University, Denmark (June 2016); MPI-SWS, Germany (May 2016); Imperial College London, UK (May 2016); Middlesex University, UK (May 2016); University of Birmingham, UK (January 2016); Queen Mary University of London, UK (December 2015); University College London, UK (April 2015); Microsoft Research, Cambridge, UK (March 2015).
- **Reasoning about non-linearizable concurrent objects**
Dagstuhl Seminar 16201, Germany (May 2016); University of Kent, UK (April 2016).
- **Anatomy of mechanized reasoning about fine-grained concurrency**
Dagstuhl Seminar 15191, Germany (May 2015).
- **Programming with Proofs**
Google, UK (April 2015); Russian Academy of Sciences, St Petersburg, Russia (August 2014).
- **Communicating State Transition Systems for Fine-Grained Concurrent Resources**
IMDEA Software Institute, Spain (April 2014); Concurrency Yak, San Diego, US (January 2014); HOPE 2013 Workshop, Boston, US (September 2013).
- **Static Analysis and Code Optimizations in Glasgow Haskell Compiler**
St Petersburg Functional Programming meetup, Russia (December 2012)
- **Gradual Ownership Types**
IMDEA Software Institute, Spain (July 2012); Aarhus University, Denmark (December 2011).
- **Scripting an IDE for DSL awareness**
Devoxx 2009, Antwerp, Belgium (November 2009)
- **Clojure support in IntelliJ IDEA**
The Bay Area Clojure User Group meetup, San Francisco, US (June 2009).
- **Cross-Language Development in IntelliJ IDEA**
JAX 2009, Mainz, Germany (April 2009); Devoxx 2008, Antwerp, Belgium (December 2008).