

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

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

Journal articles

J1 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>

J2 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>

- J3 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>
- J4 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>
- J5 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>
- J6 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>
- J7 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>
- J8 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>
- J9 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

- C1 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
- C2 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
- C3 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
- C4 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>
- C5 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

- C6 **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>
- C7 **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
- C8 **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
- C9 **Mechanising Blockchain Consensus**
George Pirlea and Ilya Sergey.
In **CPP 2018**, 22/51 \approx 43% accepted.
<https://doi.org/10.1145/3167086>
- C10 **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>
- C11 **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>
- C12 **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>
- C13 **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>
- C14 **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>
- C15 **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
- C16 **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
- C17 **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>
- C18 **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>

C19 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>

C20 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

C21 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: State-of-the-art, Applications, Challenges and Future Directions*.

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 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* [J1], 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* [J3], 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.

5 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

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. **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*
2. **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

- **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

- **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: [C2].
- **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; conference paper: [C5].

- **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: [C9].
- **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](#)
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

- [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](#), 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).