Ben Simner

Curriculum Vitae

Contact

University of Cambridge
Department of Computer Science and Technology
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Positions & Experience

2026– **Research Scientist**, Rigorous Engineering Ltd.
2025– **Research Associate**, Computer Science, University of Cambridge.
2023-2025 **Research Assistant**, Computer Science, University of Cambridge.
2018-2025 **PhD**, Computer Science, University of Cambridge.
Autumn'18 **Intern**, University of Cambridge.
Summer'17 **Intern**, Microsoft Research, Cambridge.
Summer'16 **Intern**, University of York.

Qualifications

2018-2025 **PhD**, Computer Science, University of Cambridge
No corrections
Thesis: Arm system semantics

2014-2018 **MEng**, Computer Science, University of York
First-class honours (with distinction)
Dissertation: Automated comparison of implementations of purely functional data structures

Grants/awards

- **VeTSS Research Award**
  Pushing on Weak Memory: Up, Down, and Out. 2026. £16,416.00. **Ben Simner** (PI).
- **Amazon Research Award**
  Gradual Lightweight Methods for High-Assurance Cloud Infrastructure. Automated Reasoning, Fall 2025. $79,996.00 cash award plus $10,000 in AWS credits. Peter Sewell (PI), **Ben Simner** (co-author), Kayvan Memarian (co-author), Rini Banerjee (co-author), Hiroyuki Katsura (co-author).
- **ERC Proof-of-Concept Grant**
  ELVER-CHECK: Well-grounded Lightweight Assurance for Critical Systems Software. 2024. ERC-2024-POC/101189371. €150,000. Peter Sewell (PI), **Ben Simner** (co-author), Kayvan Memarian (co-author), Jean Pichon-Pharabod (co-author).
- **Amazon Research Award**
  The Foundations of Cloud Virtual-machine Isolation. Automated Reasoning, Fall 2023. $54,603 cash award plus $20,000 in AWS credits. Peter Sewell (PI), **Ben Simner** (co-author).

Publications

Preamble In this field, the primary venue for publication is peer-reviewed conference proceedings. These order authors by contribution, often (but not always) with the PI being last. Those listed are all full-length papers, and not extended abstracts or pre-publications unless stated. The Symposium on Operating System Principles (SOSP), International Symposium on Computer Architecture (ISCA), Computer Aided Verification (CAV), and the European Symposium on Programming (ESOP) are flagship venues in their fields. These venues are all competitively peer-reviewed, with acceptance rates typically around 15-25%, e.g. SOSP'25 accepted 66 of 368 submissions (18%), ISCA'25 accepted 132 of 570 submissions (23%).

▷ **Abstract architecture catches concrete bugs: lightweight checking of page table synchronisation** [pdf]
Ben Simner, Thomas Fourier, Yeji Han, David Kaloper Meršinjak, Thibaut Pérami, Peter Sewell, Jean Pichon-Pharabod
in Proceedings of the 22nd European Conference on Computer Systems (EuroSys'27), to appear.

▷ **Ghost in the Android Shell: Pragmatic Test-oracle Specification of a Production Hypervisor** [pdf]
Kayvan Memarian[1], **Ben Simner**[1], David Kaloper Meršinjak, Thibaut Pérami, Peter Sewell
in Proceedings of the 31st ACM SIGOPS Symposium on Operating Systems Principles (SOSP'25), pp685-700 (16pp)
[1]These authors contributed equally.

▷ **Arm system semantics** [pdf]
Ben Simner
PhD thesis, 2025

▷ **Precise exceptions in relaxed architectures** [pdf]
Ben Simner, Alasdair Armstrong, Thomas Bauereiss, Brian Campbell, Ohad Kammar, Jean-Pichon Pharabod, and Peter Sewell
in Proceedings of the 52nd International Symposium on Computer Architecture (ISCA'25), pp211-224 (14pp) BEST PAPER AWARD

▷ **Wait-Free Weak Reference Counting** [pdf]
Matthew J. Parkinson, Sylvan Clebsch, and **Ben Simner**
in Proceedings of the 2023 ACM SIGPLAN International Symposium on Memory Management, pp85-96 (12pp)

▷ **Isla: Integrating full-scale ISA semantics and axiomatic concurrency models (journal version)** [pdf]
Alasdair Armstrong, Brian Campbell, **Ben Simner**, Christopher Pulte, and Peter Sewell
in Formal Methods in System Design (FMSD), Volume 63, May 2023, pp110-133 (24pp)

▷ **Relaxed Virtual Memory in Armv8-A** [pdf]
Ben Simner, Alasdair Armstrong, Jean Pichon-Pharabod, Christopher Pulte, Richard Grisenthwaite, and Peter Sewell
in Programming Languages and Systems: 31st European Symposium on Programming (ESOP'22), pp143-173 (31pp) NOMINATED FOR BEST PAPER

▷ **Isla: Integrating full-scale ISA semantics and axiomatic concurrency models** [pdf]
Alasdair Armstrong, Brian Campbell, **Ben Simner**, Christopher Pulte, and Peter Sewell
in Proceedings Part I of Computer Aided Verification: 33rd International Conference (CAV'21), pp303-316 (14pp)

▷ **ARMv8-A system semantics: instruction fetch in relaxed architectures** [pdf]
Ben Simner, Shaked Flur, Christopher Pulte, Alasdair Armstrong, Jean Pichon-Pharabod, Luc Maranget, Peter Sewell
in Programming Languages and Systems: 29th European Symposium on Programming (ESOP'20), pp626-655 (30pp)

▷ **Starling: Lightweight Concurrency Verification With Views** [pdf]
Matthew Windsor, Mike Dodds, **Ben Simner**, Matthew J Parkinson
in Proceedings Part I of Computer Aided Verification: 29th International Conference (CAV'17), pp544-569 (26pp)

Note: Awards are in GREEN. Nominations are in BLUE.

Teaching

Project students (co-supervisor):

- 2023-24 Jasper Parish, Part II.
- 2023-24 Ben Stokes, Part II.

Undergraduate teaching (supervisions):

- 2018-19 Foundations of Computer Science
  Part IA (3 groups)
- 2018-19 Hoare Logic & Model Checking
  Part II (3 groups)
- 2019-20 Concurrent & Distributed Systems
  Part IB (3 groups)
- 2023-24 Semantics
  Part IB (5 groups)

Student mentoring (unofficial):

- 2026 Vasyl Denysiuk
  Intern.
- 2025- Nils Lauermann
  de-facto co-supervised PhD student.
- 2024 Thomas Fourier
  Visiting master's student.
- 2024 Yeji Han
  Visiting master's student.
- 2023 Ben Stokes
  Intern.

Courses (lecturing):

- 2025-26 *Multicore semantics (L304)*
  (Part III/MPhil, ˜20 students)
  2hrs guest lectures

Note: Part IA is the first year, Part IB the second year, Part II the third year, and Part III the fourth year, in Cambridge nomenclature.