

# Dr Alex Potanin

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## At a Glance

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- **Track Record:** 100+ publications across two decades, 6 distinguished/best paper awards, 80+ students supervised at all levels, \$609K+ in research funding
- **Research Areas:** Cyber Security (Capabilities, Language Security), Software Engineering, Programming Language Design & Implementation, Type Systems (Ownership, Immutability), Software Verification, Quantum Computing Verification, Embedded Systems & Edge AI
- **Leadership:** Chair of SPLASH Steering Committee (2024–2026), Treasurer & Member at Large of ACM SIGPLAN Executive Committee (2025–2027), General Chair of SPLASH/OOPSLA 2022, Research Committee Co-Chair of OOPSLA 2024, PC Chair of APLAS 2025, Permanent Member of IFIP WG 2.4
- **Education:** BSc (Mathematics & Computer Science), BSc Hons, PhD — *Victoria University of Wellington, NZ*
- **Memberships:** Senior Member of the ACM, Member of Engineers Australia, Permanent Member of IFIP 2.4 Working Group on Software Implementation Technology

## Research Impact

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My ownership type system research directly influenced how the [Rust](#) programming language implements its ownership and lifetime system—one of Rust’s defining features for memory safety. My foundational papers on generic ownership (OOPSLA 2006, 100+ citations) and generic immutability (FSE 2007, 100+ citations) showed how ownership and immutability guarantees can be incorporated “for free” into existing language designs. The [“Performance of Open Source Applications” book](#) cites my research that revolutionised performance evaluations in Talos and similar systems.

After a full-year sabbatical at Carnegie Mellon University, I co-created the [Wyvern Programming Language](#) with Professor Jonathan Aldrich—a novel general-purpose language designed with security and usability as primary goals. The [CUE](#) configuration language, used widely within Alibaba’s cloud, based its module system on Wyvern’s design. Wyvern produced numerous publications including work on type-specific languages (ECOOP 2014 Distinguished Paper) and decidable typing for type members (POPL 2020).

My **cyber security** research spans capability-based systems, language-level security mechanisms, and vulnerability discovery. My work uncovered critical vulnerabilities in Java-based web servers (Jenkins, Tomcat, JBoss) and .NET equivalents, published at ECOOP 2017 (Distinguished Artifact Award) and supported by \$50,000 USD Oracle Labs funding. Wyvern’s capability-based module system provides authority-safe security guarantees, and my current research explores CHERI capabilities hardware security and secure-by-construction software development approaches.

Most recently, I have established a significant research programme in **quantum program verification**, applying formal methods expertise from classical software to the rapidly emerging quantum computing domain. This work has already produced publications at top venues: embedding quantum program verification into Dafny (OOPSLA 2025) and validating quantum state preparation programs (ESOP 2026, Distinguished Paper Award). I am supervising multiple students in this area across ANU and Iowa State University, and collaborating with Assistant Professor Liyi Li on quantum symbolic execution and distributed quantum computation. This represents a natural and impactful extension of my verification and language design expertise into one of computing’s most important frontiers.

## Selected Award-Winning & High-Impact Publications

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1. Liyi Li, Anshu Sharma, Zoukarneini Difaizi Tagba, Sean Frett, and Alex Potanin. *Validating Quantum State Preparation Programs*. ESOP 2026. **ETAPS/ESOP 2026 Distinguished Paper Award**.
2. Amos Robinson, Alex Potanin. *Pipit on the Post: Proving Pre- and Post-Conditions of Reactive Systems*. ECOOP 2024. **ECOOP 2024 Distinguished Artifact Award**.
3. Tobias Runge, Alex Potanin, Thomas Thum, and Ina Schaefer. *Traits: Correctness-by-Construction for Free*. FORTE 2022. **FORTE 2022 Best Paper Award**.
4. Jens Dietrich, Kamil Jezek, Shawn Rasheed, Amjed Tahir, Alex Potanin. *EvilPickles: DoS Attacks Based on Object-Graph Engineering*. ECOOP 2017. **ECOOP 2017 Distinguished Artifact Award**.
5. Cyrus Omar, Darya Melicher, Ligia Nistor, Benjamin Chung, Alex Potanin, and Jonathan Aldrich. *Safely Composable Type-Specific Languages*. ECOOP 2014. **ECOOP 2014 Distinguished Paper Award**.
6. Yoav Zibin, Alex Potanin, Mahmood Ali, Shay Artzi, Adam Kiezun, and Michael D. Ernst. *Object and Reference Immutability using Java Generics*. FSE 2007. **ESEC/FSE 2007 ACM SIGSOFT Distinguished Paper Award**. 100+ citations.
7. Alex Potanin, James Noble, Dave Clarke, and Robert Biddle. *Generic Ownership for Generic Java*. OOPSLA 2006. 100+ citations. Directly influenced the Rust programming language.
8. Julian Mackay, Alex Potanin, Jonathan Aldrich, and Lindsay Groves. *Decidable Subtyping for Path Dependent Types*. POPL 2020. Reusable Artifact badge.
9. Feifei Cheng, Sushen Vangeepuram, Henry Allard, Seyed M.R. Jafari, Alex Potanin, and Liyi Li. *Embedding Quantum Program Verification into Dafny*. OOPSLA 2025.
10. Alex Potanin, Johan Ostlund, Yoav Zibin, Michael D. Ernst. *Immutability*. Book chapter in *Aliasing in Object-Oriented Programming*, LNCS 7850, Springer, 2013.
11. Alex Potanin, James Noble, Marcus Freat, and Robert Biddle. *Scale-free Geometry in Object-Oriented Programs*. Communications of the ACM, 2005. 300+ citations.

## Research Funding

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Period	Funder	Grant	Amount
2009 – 2011	Royal Society of NZ	Marsden Fast Start Grant	\$300,000
2021 – 2023	SHEADI	Faculty Strategic Initiative PhD Scholarship	\$100,000
2020 – 2021	Robonomics Network	Research Grant (Nitrate Sensors)	\$72,000
2017 – 2018	Oracle Corporation	Research Grant (Language Security)	\$70,000
2007 – 2016	VUW	University Research Fund (multiple rounds)	\$47,000
2012	Mozilla Foundation	Research Grant	\$15,000
2009	RSNZ	ISAT Grant	\$5,420
<b>Total</b>			<b>\$609,420</b>

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## Students and Mentoring

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Over 80 students supervised across two decades at ANU, VUW, CMU, KIT, and Iowa State. My former students and collaborators have gone on to leading positions:

- [Radu Muschevici](#) — Assistant Professor, University of Nottingham Malaysia
- [Amos Robinson](#) — Computer Scientist, Microsoft
- [Justin Lubin](#) — PhD candidate, UC Berkeley
- Darya Melicher — Google
- [Paley Li](#) — Postdoc, Czech Technical University (with Jan Vitek)
- [Hannes Mehnert](#) — Co-founder, Robur cooperative
- Felix Shi — Senior Security Architect, Xero

- Garming Sam — Security Platform Engineer, Westpac NZ
- Constantine Dymnikov — Solutions Architect, NZ Ministry of Justice

### Current Students (17)

Student	Level	Topic
Yan Liu	Postdoc (ANU)	Research Fellow, 2025–2027
Sasha Pak	PhD (ANU)	Rust Made Easier (with Ilya Sergey, Fabian Mühlböck)
Edwin Singh	PhD (ANU, PT)	Why Language Designers Do Modules The Way They Do
Zara Hassan	PhD (ANU)	Reproducibility Debt in Scientific Software
Haoyu Wu	PhD (ANU)	Nomnom Type Checking (with Fabian Mühlböck)
Carlo Zancanaro	PhD (ANU)	Gradual Typing and Type Polymorphism
Abolfazl Sharifi	PhD (ANU)	Topic TBC
Fahimeh Hoseinnia	PhD (VUW)	Agricultural Pollution Data Marketplace and DAOs
Feifei Cheng	PhD (Iowa State)	Quantum Computing Symbolic Execution (with Liyi Li)
Maximillian Kodetzki	PhD (KIT)	X-by-Construction (with Ina Schaefer)
Jakob Jerebica	PhD (KIT)	Topic TBC (with Ina Schaefer, Michael Norrish)
Alyssa Herald	Honours (ANU)	Security of Capabilities in CHERI
Jack Hackshaw	Honours (ANU)	Pancake in Loom in Lean
Billy Jaffray	Honours (ANU)	Verification in Rust using Loom
Rishita Sarkar	BAC R&D (ANU)	Quantum Computing Testing
Libby Boas	PhB ASC (ANU)	Quantum Computing Distributed Computation
Charlotte Fulham	Eng ASC (ANU)	Fiducia to Microkit Bridge Implementation

### Selected Completed Students

- Amos Robinson (Postdoc, ANU, 2023–2025) — Higher Level Invariants with Lark → Microsoft
- Tobias Runge (PhD, KIT, 2019–2022) — CbC with Ownership and Traits (with Ina Schaefer)
- Julian Mackay (PhD, VUW, 2015–2019) — Wyvern Type Members (with Jonathan Aldrich)
- Darya Melicher (PhD, CMU, 2013–2019) — Wyvern Modules (with Jonathan Aldrich) → Google
- Ahmed Khalifa (PhD, VUW, 2010–2013) — Ownership and Immutability in the Real World
- Garming Sam (BE Hons, VUW, 2015) — Refactorings in Rust → Westpac NZ
- Radu Muschevici (MSc, VUW, 2007–2008) — Multimethods → Asst. Prof., U. Nottingham Malaysia
- Constantine Dymnikov (MSc, VUW, 2011) — Modular Ownership Inference → NZ MoJ
- Paley Li (BSc Hons, VUW, 2008) — Ownership and Immutability → Postdoc, Czech Technical U.

As Associate Director of HDR at ANU School of Computing (2023–2025), I managed admissions, supervision, and progress for over 200 PhD students, created a monitoring app to proactively track student progress, and revamped the admissions and scholarship process.

## Employment Record

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2022 – Present	Associate Professor, Australian National University
2023 – Present	Adjunct Professor, S3D, Carnegie Mellon University, USA
2025	Research Consultant, Usability Dynamics Inc, NC, USA
2025	Research Consultant, Skykraft, Canberra, Australia
2023 – 2025	Associate Director, HDR, School of Computing, ANU
2022 – 2025	Adjunct Professor, ECS, VUW, NZ
2022	Deputy Head of School, Victoria University of Wellington
2021 – 2022	Associate Dean (Students), Victoria University of Wellington
2018 – 2022	Associate Professor, Victoria University of Wellington
2019/20 (sabbatical)	Associate Professor, Kyoto University, Japan
2010 – 2017	Senior Lecturer, Victoria University of Wellington
2013 (sabbatical)	Research Scholar, Carnegie Mellon University
2006 – 2009	Lecturer, Victoria University of Wellington
2005 – 2006	Software Engineer, Innaworks Limited
2004	Visiting Researcher, Purdue University
2001 – 2003	Software Engineer, Catalyst Systems Limited (part-time)

## Professional Memberships

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2024 – 2027	Member at Large (and Treasurer), <i>ACM SIGPLAN Executive Committee</i>
2024 – 2026	Chair, <i>SPLASH Steering Committee</i>
2023 – Present	Member of Engineers Australia
2002 – Present	Member of the ACM (currently: Senior Member)
2018 – 2022	Member of Engineering New Zealand
2010 – 2014	Member of CORE (CS Departments of Australia/NZ) Executive

## Grants and Awards

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- 2026 – ESOP/ETAPS 2026 Distinguished Paper Award
- 2024 – ECOOP 2024 Distinguished Artifact Award
- 2022 – FORTE 2022 Best Paper Award
- 2021 – 2023 – SHEADI Faculty Strategic Initiative PhD Scholarship (\$100,000 NZD)
- 2020 – 2021 – Robonomics.Network Research Grant (\$72,000 NZD)
- 2017 – 2018 – Oracle Corporation Research Grant (\$70,000 NZD)
- 2017 – ECOOP 2017 Distinguished Artifact Award
- 2014 – ECOOP 2014 Distinguished Paper Award
- 2009 – 2011 – RSNZ Fast Start Marsden Grant (\$300,000 NZD)
- 2012 – Mozilla Foundation Research Grant (\$15,000 NZD)
- 2007 – 2016 – VUW URF Grants (\$18,000 '16, \$12,000 '08, \$17,000 '07)
- 2009 – RSNZ ISAT Grant (\$5,420 NZD)
- 2007 – ESEC/FSE ACM SIGSOFT Distinguished Paper Award
- 2005 – 2nd Prize and Judges Prize at ICFP Programming Contest 2005 and 2003
- 2004 – Claude McCarthy Fellowship; 2003 – J. L. Stewart Scholarship
- 2003 – 2nd Place, ACM International Research Competition (via OOPSLA 2002 SRC)
- 2002 – Freemasons Scholarship; 2001 – Datacom Scholarship in Computer Science
- 1997 – Finalist, George Soros International Mathematics Olympiad
- 1996 – Winner, Russian City Tournament in Mathematics

## Community Leadership and Service

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### Conference Leadership

- Chair, SPLASH Steering Committee, 2024–2026

- Member at Large and Treasurer, ACM SIGPLAN Executive Committee, 2025–2027
- General Chair, SPLASH/OOPSLA 2022 (combined with APLAS 2022), Auckland, NZ
- Research Committee Co-Chair, OOPSLA 2024 (with Bur-Yuh Chang)
- PC Chair, APLAS 2025
- General Chair, APLAS 2018, Wellington, NZ
- Program Co-Chair, APSEC 2016 (with Gail Murphy)
- PC Co-Chair, CATS 2010 and 2011 (with Taso Viglas)
- General Co-Chair, ACSW 2009, Wellington, NZ
- General Chair, 15th PhD Workshop and Doctoral Symposium at ECOOP 2005
- Chair, NOOL Workshop 2015 and 2017
- Workshops Co-Chair, SPLASH 2017 and 2018
- Publications Chair, SPLASH 2015–2017; ICFP 2018
- Virtualisation Co-Chair, SPLASH 2020 and 2021
- SPLASH/OOPSLA Steering Committee Member from 2020 (Chair from 2024)
- SAPLING Steering Committee Member from 2019

### Program Committee Member (selected)

PLDI 2025, FSE-IVR 2025, OOPSLA (2021 ERC, 2020, 2019, 2014, 2011 ERC), ECOOP (2023, 2022, 2019, 2016), ESOP 2021, APLAS (2021, 2016), GPCE (2020, 2019), PLDI 2015 (ERC), HotSoS 2019, PLDI SRC 2019, FTfJP 2016, NOOL 2016, IWACO (2024, 2021, 2011, 2007), FormaliSE (2023, 2022), Programming (2023, 2022), Onward! Papers 2023, FOOL 2014, ACSC (2010–2017).

### University Service

- Associate Director, HDR, ANU School of Computing (2023–2025) — managed 200+ PhD students
- Program Convenor, BE Software Engineering, ANU (2022–present)
- DBI&E Working Group Lead, ANU School of Computing (2023–present)
- Deputy Head of School, VUW (2022) — 15 direct academic reports
- Associate Dean (Students), Faculty of Engineering, VUW (2021–2022) — 2000 students
- Program Director (Software Engineering), VUW (2017–2018) — led SWEN/NWEN/CYBR majors
- Program Director (Science), VUW (2019) — led introduction of AI/ML postgraduate program
- Postgraduate Coordinator, VUW (2012–2016) — 100 PhD/Masters students
- Engineering NZ Accreditation Panel member (2018) — re-accredited U. Canterbury BE
- NZ Qualifications Authority representative (2018) — accredited new BIT degree

### Research Themes

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#### Cyber Security

Capability-based security, authority-safe module systems, and preventing command injection and other attacks through language design. EvilPickles (ECOOP 2017, Distinguished Artifact) uncovered critical security flaws in Java/JBoss/Jenkins and .NET servers, leading Oracle and Microsoft to fix the vulnerabilities within 6 months—supported by \$50,000 USD Oracle Labs funding. Research on CHERI capabilities hardware security (Honours student Alyssa Herald). Secure-by-construction software development through the Wyvern language’s capability-based module system (ECOOP 2017, HotSoS 2018) and type-specific languages to fight injection attacks (HotSoS 2014).

#### Embedded Systems & Edge AI

Trustworthy systems security for embedded and space platforms, including consulting for Skykraft and other industry partners. Exploring secure Edge AI deployment on NVIDIA Jetson Orin.

## Quantum Computing

A major new research direction applying formal methods to quantum computing. Developed the first embedding of quantum program verification into the Dafny verification framework (OOPSLA 2025), enabling developers to write and verify quantum programs using familiar classical tools. Our work on validating quantum state preparation programs (ESOP 2026, Distinguished Paper) addresses a critical challenge in ensuring correctness of quantum circuits. Current projects include quantum symbolic execution (PhD student Feifei Cheng at Iowa State), quantum computing testing (Rishita Sarkar), and distributed quantum computation (Libby Boas), with collaborator Liyi Li (Iowa State).

## The Wyvern Language

A secure general-purpose programming language using object capabilities and effects, co-developed with Jonathan Aldrich at CMU over 2013–2023. The CUE configuration language based its module system on Wyvern. Produced 12+ co-authored papers (<http://wyvernlang.github.io/>).

## Ownership & Immutability

Pioneered Generic Ownership, showing how type polymorphism provides ownership support. This approach was adopted by the Rust programming language as “lifetime parameters”. Led the Marsden-funded project (2008–2012) unifying ownership and immutability in a single mathematical framework.

## Software Verification

Proving pre- and post-conditions of reactive systems with the Pipit framework (ECOOP 2024, Distinguished Artifact), and correct-by-construction programming approaches including traits (FORTE 2022 Best Paper) and flexible CbC (LMCS 2023). Research Fellow Yan Liu is working on trustworthy systems verification.

## Software Engineering

Empirical studies of software development practices, developer tools and productivity, API usability, and evidence-based approaches to improving software quality and developer experience. Supervised research on reproducibility debt in scientific software (JSS 2025, FSE-IVR 2024, SPLASH 2025 poster), algorithm debt in ML/DL systems (ESE 2025, ICSME 2024), and automated refactoring in Rust (ACSC 2017, SPLASH 2025 posters). Led the Software Engineering program at VUW (2017–2018) and currently convenes BE Software Engineering at ANU.

## Collaborations

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- Professor Jonathan Aldrich, CMU, USA (Wyvern, capabilities, type members)
- Professor Ina Schaefer, KIT, Germany (correct-by-construction, information flow)
- Assistant Professor Liyi Li, Iowa State University, USA (quantum program verification, symbolic execution)
- Professor Atsushi Igarashi, Kyoto University, Japan (ownership verification)
- Professor Ilya Sergey, NUS, Singapore (Rust, deductive synthesis)

## Referees

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- Professor Peter Müller, *ACM Fellow*, ETH Zurich, Switzerland
- Professor Steve Blackburn, *ACM Fellow*, ANU/Google DeepMind
- Professor Jeff Foster, *ACM Fellow*, Tufts University, USA
- Professor David Lo, *ACM Fellow*, Singapore Management University
- Professor Anders Møller, Aarhus University, Denmark
- Professor Sophia Drossopoulou, Imperial College London, UK
- Professor Jan Vitek, Northeastern University, USA

## Teaching Highlights

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- **COMP 3500/4500/8715 TechLauncher (ANU, 2025):** Redesigned capstone course for 400+ students with external clients. Reduced tutor budget by half while increasing satisfaction. *Achieved 100% overall student satisfaction score.*
- **COMP 2120 Software Engineering (ANU, 2022–2024):** Created modern group-project-oriented course where 50+ teams contribute pull requests to large open-source projects.
- **SWEN 325 Mobile Development (VUW, 2018):** Created brand-new course from scratch. *Overall teaching evaluation: 1.0 (best possible).*
- **SWEN 430 Compiler Engineering (VUW, 2020):** Close to 1.0 teaching evaluations despite COVID year.
- **COMP 361 Algorithms (VUW, 2014):** Reinvented struggling course, increasing enrolments tenfold from 5–6 to ~60.
- **SWEN 302 Agile Methods (VUW, 2014):** Rescued course from 4.0 evaluation (worst in ECS history) to 2.0 via complete redesign with time-boxing and internal clients.
- **AI/ML Program (VUW, 2019):** Led introduction of postgraduate AI and Machine Learning program as Program Director (Science).
- **Software Engineering Review (VUW, 2017):** Led first major overhaul of BE Software Engineering across 20+ staff, approved by Academic Board.

Consistent “overall effectiveness” scores around 1.6 at VUW (scale 1–5, 1 = outstanding). Perfect 1.0 scores for “Attitude towards students” across all years. Taught classes from 5 to 500 students across all levels.

## Full Publications List

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### Book Chapters

1. James Noble, Alex Potanin, Toby Murray, Mark S. Miller. *Abstract and Concrete Data Types vs Object Capabilities*. In P. Müller and Ina Schaefer (Eds.): *Principled Software Development*. Springer, 2018.
2. Alex Potanin, Johan Ostlund, Yoav Zibin, Michael D. Ernst. *Immutability*. In D. Clarke et al. (Eds.): *Aliasing in Object-Oriented Programming*, LNCS 7850, pp. 233–269. Springer, 2013.

### Journal Papers

3. Emmanuel Iko-Ojo Simon, Chirath Hettiarachchi, Fatemeh Fard, Alex Potanin, Hanna Suominen. *A Survey of Algorithm Debt in Machine and Deep Learning Systems: Definition, Smells, and Future Work*. *Empirical Software Engineering*. Springer. Accepted December 2025.
4. Zara Hassan, Christoph Treude, Michael Norrish, Graham Williams, and Alex Potanin. *Characterising Reproducibility Debt in Scientific Software: A Systematic Literature Review*. *The Journal of Systems & Software*. Volume 222, April 2025, 112327.
5. Tobias Runge, Tabea Bordis, Alex Potanin, Thomas Thum, Ina Schaefer. *Flexible Correct-by-Construction Programming*. *Logical Methods in Computer Science*. Volume 19, Issue 2, pp. 16:1–16:36. 2023.
6. Tobias Runge, Marco Servetto, Alex Potanin, Ina Schaefer. *Immutability and Encapsulation for Sound OO Information Flow Control*. *ACM TOPLAS*. Volume 45, Issue 1, Article No. 3 pp 1–35. 2022.
7. Isaac Oscar Gariano, Marco Servetto, Alex Potanin. *Using Capabilities for Strict Runtime Invariant Checking*. *Science of Computer Programming*, Volume 224, 2022.
8. Darya Melicher, Anlun Xu, Valerie Zhao, Alex Potanin, Jonathan Aldrich. *Bounded Abstract Effects*. *ACM TOPLAS*, Volume 44, Issue 1, March 2022.
9. Isaac Oscar Gariano, Marco Servetto, Alex Potanin, Hrshikesh Arora. *Iteratively Composing Statically Verified Traits*. *EPTCS*. Issue 299, Paper 7. 2019.
10. Chris Male, David Pearce, Alex Potanin, and Constantine Dymnikov. *Formalisation and Implementation of an Algorithm for Bytecode Verification of @NonNull Types*. *Science of Computer*

Programming. Volume 76, Issue 7, pp. 587–608, 2011.

11. Alex Potanin, James Noble, Dave Clarke, and Robert Biddle. *Featherweight Generic Confinement*. Journal of Functional Programming. Volume 16, Number 6, pp. 793–811, 2006.
12. Alex Potanin, James Noble, Marcus Freat, and Robert Biddle. *Scale-free Geometry in Object-Oriented Programs*. Communications of the ACM. Pages 99–103. May 2005.
13. Alex Potanin, James Noble, and Robert Biddle. *Checking Ownership and Confinement*. Concurrency and Computation: Practice and Experience. Volume 16, Issue 7, pp. 671–687, 2004.

## Refereed Conference Papers

14. Liyi Li, Anshu Sharma, Zoukarneini Difaizi Tagba, Sean Frett, and Alex Potanin. *Validating Quantum State Preparation Programs*. ESOP 2026. **Distinguished Paper**.
15. Feifei Cheng, Sushen Vangeepuram, Henry Allard, Seyed M.R. Jafari, Alex Potanin, and Liyi Li. *Embedding Quantum Program Verification into Dafny*. OOPSLA 2025.
16. Maximilian Kodetzki, Tabea Bordis, Alex Potanin, Ina Schaefer. *X-by-Construction: Towards Ensuring Non-Functional Properties in by-Construction Engineering*. Onward! 2025.
17. Emmanuel Iko-Ojo Simon, Chirath Hettiarachchi, Alex Potanin, Hanna Suominen, and Fateh-meh Fard. *Automated Detection of Algorithm Debt in Deep Learning Frameworks*. ICSME 2024.
18. David Young, Ziyi Yang, Ilya Sergey, Alex Potanin. *Higher-Order Specifications for Deductive Synthesis of Programs with Pointers*. ECOOP 2024.
19. Amos Robinson, Alex Potanin. *Pipit on the Post: Proving Pre- and Post-Conditions of Reactive Systems*. ECOOP 2024. **Distinguished Artifact**.
20. Zara Hassan, Christoph Treude, Michael Norrish, Graham Williams, Alex Potanin. *Reproducibility Debt: Challenges and Future Pathways*. FSE-IVR 2024.
21. Tobias Runge, Alexander Kittelmann, Marco Servetto, Alex Potanin, and Ina Schaefer. *Information Flow Control-by-Construction for an Object-Oriented Language*. SEFM 2022.
22. Tobias Runge, Alex Potanin, Thomas Thum, and Ina Schaefer. *Traits: Correctness-by-Construction for Free*. FORTE 2022. **Best Paper**.
23. Manish Singh, Lindsay Groves, and Alex Potanin. *A Relaxed Balanced Lock-free Binary Tree*. PDCAT 2020.
24. Julian Mackay, Alex Potanin, Jonathan Aldrich, and Lindsay Groves. *Syntactically Restricting Bounded Polymorphism for Decidable Subtyping*. APLAS 2020.
25. Julian Mackay, Alex Potanin, Jonathan Aldrich, and Lindsay Groves. *Decidable Subtyping for Path Dependent Types*. POPL 2020. Reusable Artifact badge.
26. Aaron Craig, Alex Potanin, Lindsay Groves and Jonathan Aldrich. *Capabilities: Effects for Free*. ICFEM 2018. Pp 231–247. Springer.
27. Jens Dietrich, Kamil Jezek, Shawn Rasheed, Amjed Tahir, Alex Potanin. *EvilPickles: DoS Attacks Based on Object-Graph Engineering*. ECOOP 2017. **Distinguished Artifact**.
28. Darya Melicher, Yangqingwei Shi, Alex Potanin, Jonathan Aldrich. *A Capability-Based Module System for Authority Control*. ECOOP 2017.
29. Garming Sam, Nicholas Cameron and Alex Potanin. *Automated Refactoring of Rust Programs*. ACSC 2017.
30. Joseph Lee, Jonathan Aldrich, Troy Shaw, Alex Potanin. *A Theory of Tagged Objects*. ECOOP 2015.
31. Cyrus Omar, Darya Melicher, Ligia Nistor, Benjamin Chung, Alex Potanin, and Jonathan Aldrich. *Safely Composable Type-Specific Languages*. ECOOP 2014. **Distinguished Paper**.
32. Marco Servetto, Julian Mackay, Alex Potanin, and James Noble. *The Billion-Dollar Fix: Safe Modular Circular Initialisation with Placeholders and Placeholder Types*. ECOOP 2013. Pp 205–229.
33. Constantine Dymnikov, David Pearce and Alex Potanin. *OwnKit: Inferring Modularly Checkable Ownership Annotations for Java*. ASWEC 2013. Pp 181–190.
34. Alex Potanin, Monique Damitio and James Noble. *Are Your Incoming Aliases Really Necessary? Counting the Cost of Object Ownership*. ICSE 2013. Pp 742–751.

35. Daniel Atkins, Alex Potanin and Lindsay Groves. *The Design and Implementation of Clocked Variables in X10*. ACSC 2013.
36. Jan Larres, Alex Potanin and Yuichi Hirose. *A Study of Performance Variations in the Mozilla Firefox Web Browser*. ACSC 2013.
37. Hien Tran, Craig Anslow, Stuart Marshall, Alex Potanin, Mairead de Roiste. *Lessons Learnt from Collaboratively Creating Maps on a Touch Table*. CHINZ 2011.
38. Yoav Zibin, Alex Potanin, Paley Li, Mahmood Ali, Michael D. Ernst. *Ownership and Immutability in Generic Java*. OOPSLA 2010. Pp. 598–617.
39. Radu Muschevici, Alex Potanin, Ewan Tempero, and James Noble. *Multiple Dispatch in Practice*. OOPSLA 2008. Pp. 563–582.
40. Chris Male, David Pearce, Alex Potanin, and Constantine Dymnikov. *Java Bytecode Verification for @NonNull Types*. CC 2008. Pp 229–244.
41. Neil Ramsay, Stuart Marshall, and Alex Potanin. *Annotating UI Architecture with Actual Use*. AUIC 2008.
42. Yoav Zibin, Alex Potanin, Mahmood Ali, Shay Artzi, Adam Kiezun, and Michael D. Ernst. *Object and Reference Immutability using Java Generics*. FSE 2007. **ESEC/FSE 2007 Distinguished Paper**.
43. Alex Potanin, James Noble, Dave Clarke, and Robert Biddle. *Generic Ownership for Generic Java*. OOPSLA 2006. Pp. 311–324.
44. Alex Potanin, James Noble, and Robert Biddle. *Snapshot Query-Based Debugging*. ASWEC 2004. Pp 251–261.

#### Refereed Workshop Papers

45. Zara Hassan, Christoph Treude, Graham Williams, Michael Norrish, Alex Potanin. *Managing Reproducibility Debt in Scientific Software: A Practical Framework*. SERS 2026.
46. Sasha Pak, Fabian Muehlboeck, Alex Potanin. *A Verified Thread-Safe Array in Rust*. IWACO 2025.
47. Abhaas Goyal, Alex Potanin and Jonathan Aldrich. *A Comparative Study of Traditional versus Capability-Based Module Systems for Modern Programming Languages*. PLATEAU 2024.
48. Amos Robinson and Alex Potanin. *Pipit: Reactive Systems in F Star (Extended Abstract)*. TyDe 2023.
49. Baptiste Pauget, David Pearce, and Alex Potanin. *Towards Compilation of an Imperative Language for FPGAs*. VMIL 2018.
50. James Noble, Sophia Drossopoulou, Mark S Miller, Toby Murray and Alex Potanin. *Abstract Data Types in Object-Capability Systems*. IWACO 2016.
51. Du Li, Alex Potanin, and Jonathan Aldrich. *Delegation vs Inheritance for Typestate Analysis*. FTfJP 2015.
52. Darya Melicher, Alex Potanin, and Jonathan Aldrich. *Wyvern: Impacting Software Security via Programming Language Design*. PLATEAU 2014.
53. James Noble and Alex Potanin. *On Owners-as-Accessors*. IWACO 2014.
54. Jonathan Aldrich, Cyrus Omar, Alex Potanin and Du Li. *Language-Based Architectural Control*. IWACO 2014.
55. Cyrus Omar, Benjamin Chung, Darya Kurilova, Alex Potanin and Jonathan Aldrich. *Type-Directed, Whitespace-Delimited Parsing for Embedded DSLs*. GlobalDSL 2013.
56. Ligia Nistor, Darya Melicher, Stephanie Balzer, Benjamin Chung, Alex Potanin and Jonathan Aldrich. *Wyvern: A Simple, Typed, and Pure Object-Oriented Language*. MASPEGHI 2013.
57. Marco Servetto, David Pearce, Lindsay Groves, and Alex Potanin. *Balloon Types for Safe Parallelisation over Arbitrary Object Graphs*. WoDeT 2013.
58. Daniel Atkins, Alex Potanin, Lindsay Groves. *Clocked References in X10*. LaME 2012.
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