

RIJNARD VAN TONDER

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ABOUT ME

Experience—I'm an adept software engineer with rich start-up experience (small to midsize, series A through D) and a deep research background in program analysis and programming languages. Over the past three years I've consistently and rapidly shipped robust and highly impactful features at [Sourcegraph](#), a unicorn start-up in the developer tools space. Tens of thousands of developers run Sourcegraph queries to search for code every day. Among other things, I direct and maintain the implementation of this domain-specific query language, and design the major syntax and behavioral extensions for it ([sample RFC](#)). I have 8 years of expertise in program analysis, languages, and compilers. My research interests focus on imminently practical techniques for improving software quality, broadly spanning testing methodologies (e.g., fuzzing smart contract compilers), language design and implementation for tools to refactor code, and developing cutting edge code search tools for finding and fixing bugs at scale. I'm proud to also independently maintain [Comby](#), a popular tool for rewriting code with 1,800+ stars on GitHub. I've shipped production Go, OCaml, TypeScript, and Python code, and swiftly pick up other languages thanks to my research background.

How I work—I write high-quality code at a rapid cadence and enjoy software workflows that encourage incremental development (e.g., I favor small, digestible pull requests that are straightforward to test and review). To give a concrete sense, I typically merge code into production within 24 hours of putting it up for review (on average, calculated over >1,000 commits in the past three years). I review others' code at the same pace. I'm a highly skilled communicator and technical writer, and I tailor my ability to business needs. My peers get excited when I publish RFCs for driving technical work. I write engaging technical blog posts that consistently feature on the front page of Hacker News and reach thousands of developers ([sample post at #6](#)).

What you can expect—I'm expertly equipped to identify and own impactful user-oriented features and technically demanding tasks, end-to-end. I have a proven track record of consistent, high caliber work while working autonomously and communicating asynchronously. I am committed to excellent software testing, delivery, and technical writing. I am motivated by interesting technical challenges that overlap with my expertise, the practice of writing good software, and driven peers. My experiences, skills, and mode of working uniquely positions me to supercharge virtually any effort driven by software-related business needs.

Currently—Research Scientist at Sourcegraph working remotely in Las Vegas, USA, on an O-1 visa. I am a South African citizen. This document is current as of 24 August, 2022.

EDUCATION

Ph.D. Computer Science, Carnegie Mellon University, 2014–2019

M. Software Engineering., Carnegie Mellon University, 2014–2017

M. Eng. & BSc. (Hons) Computer Science, Stellenbosch University, 2009–2014

EMPLOYMENT

Sourcegraph, Research Scientist, Las Vegas NV, October 2019–current

Advancing large-scale code search and refactoring. For example, I (re)wrote and maintain the mission-critical code processing search queries—code executed by tens of thousands of developers every day.

Facebook, Software Eng. Intern, Menlo Park CA, May–Aug 2018 and May–Aug 2017

Added 5× speedup and advanced taint analysis to [Pyre](#), the Python type checker behind [Instagram](#)'s codebase.

Microsoft Research, Software Eng. Intern, Redmond WA, May–Jul 2014

Enhanced symbolic execution for finding bugs in stateful programs with Patrice Godefroid in the RiSE group.

SELECTED PUBLICATIONS

* indicates coauthorship

1. Rijnard van Tonder and Claire Le Goues, [Static Automated Program Repair for Heap Properties](#). **ACM Distinguished Paper Award**, *International Conference on Software Engineering (ICSE)*, 2018.
2. Rijnard van Tonder and Claire Le Goues, [Lightweight Multi-language Syntax Transformation with Parser Parser Combinators](#). *Programming Language Design and Implementation (PLDI)*, 2019.
3. Rijnard van Tonder, John Kotheimer, and Claire Le Goues, [Semantic Crash Bucketing](#). *Automated Software Engineering (ASE)*, 2018.
4. Alex Groce, Rijnard van Tonder*, Goutamkumar Tulajappa Kalburgi, and Claire Le Goues, [Making No-fuss Compiler Fuzzing Effective](#). *Compiler Construction (CC)*, 2022.
5. Alex Groce, Kush Jain, Rijnard van Tonder*, Goutamkumar Tulajappa Kalburgi, and Claire Le Goues, [Looking for Lacunae in Bitcoin Core's Fuzzing Efforts](#) (Short). *International Conference on Software Engineering, Software Engineering in Practice (ICSE-SEIP)*, 2022.
6. Rijnard van Tonder and Claire Le Goues, [Tailoring Programs for Static Analysis via Program Transformation](#). *International Conference on Software Engineering (ICSE)*, 2020.
7. Rijnard van Tonder, Asher Trockman, and Claire Le Goues. [A Panel Data Set of Cryptocurrency Development Activity on GitHub](#). *Mining Software Repositories (MSR)*, 2019.
8. Asher Trockman, Rijnard van Tonder*, and Bogdan Vasilescu. [Striking Gold in Software Repositories? An Econometric Study of Cryptocurrencies on GitHub](#). *Mining Software Repositories (MSR)*, 2019.
9. Rijnard van Tonder and Claire Le Goues, [Towards s/engineer/bot: Principles for Program Repair Bots](#). *Bots in Software Engineering (BotSE@ICSE)*, 2019.
10. Ivan Gotovchits, Rijnard van Tonder*, and David Brumley, [Saluki: Finding Taint-style Vulnerabilities with Static Property Checking](#). *Workshop on Binary Analysis Research (BAR)*, 2018.
11. Rijnard van Tonder and Claire Le Goues, [Defending Against the Attack of the Micro-clones](#). *International Conference on Program Comprehension (ICPC)*, 2016.

My citation count is 213 (h-index 8) via [Google Scholar](#).

PROFESSIONAL SERVICE

Journal Reviewer

2022—IEEE Transactions on Software Engineering (**TSE**)

2020—IEEE Transactions on Software Engineering (**TSE**), Information and Software Technology (**INFSOFT**), ACM Transactions on Software Engineering and Methodology (**TOSEM**)

2019—Journal of Systems & Software (**JSS**), New Ideas and Trends

Conference Program Committee Member and Reviewer

2022—ACM Join European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE**), **Industrial Track**, International Conference on Automated Software Engineering (**ASE**), **Industry Showcase**

2021—ACM Join European Software Engineering Conference and Symposium on the Foundations of Software Engineering (**ESEC/FSE**), **Industrial Track**

2020—International Conference on Automated Software Engineering (**ASE**), (Rapid Response Reviewer Award), International Conference on Software Engineering, New Ideas and Emerging Research (**ICSE-NIER**), International Conference on Mining Software Repositories (**MSR**), Data Showcase, 2020