

# Shravan Ravi Narayan

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## Education

- 2022–current **PostDoc**, *University of California, San Diego*.  
Advisor: Prof. Deian Stefan
- 2016–2022 **Ph.D.**, *University of California, San Diego*.  
Advisor: Prof. Deian Stefan
- 2009–2013 **B.Eng**, *McGill University*, Montreal.

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## Publications

1. M. Kolosick, S. Narayan, C. Watt, M. LeMay, D. Garg, R. Jhala, and D. Stefan. [Isolation without taxation: Near zero cost transitions for SFI](#). Principles of Programming Languages (POPL), 2022.
2. S. Narayan, C. Disselkoen, and D. Stefan. [Tutorial: Using RLBox to sandbox unsafe C code](#). IEEE Secure Development Conference (SecDev), 2021.
3. S. Narayan, C. Disselkoen, D. Moghimi, S. Cauligi, E. Johnson, Z. Gang, A. Vahldiek-Oberwagner, R. Sahita, H. Shacham, D. Tullsen, D. Stefan. [Swivel: Hardening WebAssembly against Spectre](#). USENIX Security Symposium, 2021.
4. E. Johnson, Y. Alhessi, D. Thien, S. Narayan, F. Brown, S. Lerner, T. McMullen, S. Savage, and D. Stefan. [Доверяй, но проверяй: SFI safety for native-compiled Wasm](#). Network and Distributed System Security Symposium (NDSS), 2021.
5. T. Garfinkel, S. Narayan, C. Disselkoen, H. Shacham, and D. Stefan. [The road to less trusted code: Lowering the barrier to in-process sandboxing](#). Article in USENIX ;login; journal, Winter 2020.
6. S. Narayan, C. Disselkoen, T. Garfinkel, N. Froyd, E. Rahm, S. Lerner, H. Shacham, and D. Stefan. [Retrofitting fine grain isolation in the Firefox renderer](#). USENIX Security Symposium, 2020.
7. J. Talpin, J. Marty, S. Narayan, D. Stefan, and R. Gupta. [Towards verified programming of embedded devices](#). Design, Automation and Test in Europe Conference (DATE), 2019. Invited paper.
8. M. Smith, C. Disselkoen, S. Narayan, F. Brown, and D. Stefan. [Browser history re:visited](#). USENIX Workshop on Offensive Technologies (WOOT), 2018.
9. F. Brown, S. Narayan, Riad S. Wahby, Dawson Engler, R. Jhala, and D. Stefan. [Finding and preventing bugs in JavaScript bindings](#). IEEE Symposium on Security and Privacy (S&P), 2017.

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## Others

10. S. Narayan and D. Stefan. [Making software sandboxing practical using language-based techniques](#). Article in SIGPLAN PL Perspectives blog, Jul 2021.
11. RLBox: Retrofitting fine grain isolation in the Firefox renderer. IEEE Symposium on Security and Privacy (S&P), 2021. Invited poster.

12. S. Narayan, T. Garfinkel, S. Lerner, H. Shacham, and D. Stefan. [Gobi: WebAssembly as a practical path to library sandboxing](#). In arXiv preprint arXiv:1912.02285, Jan 2019, updated Nov 2019.

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## Awards and honors

- 2022 Winner of the IEEE Cybersecurity Awards for Practice, Secure Development Conference 2022. *Retrofitting fine grain isolation in the Firefox renderer*.
- 2022 NSA Best Scientific Cybersecurity Paper, Honorable Mention. *Retrofitting fine grain isolation in the Firefox renderer*.
- 2021 Google V8 research award. *Practical, portable, and verified library sandboxing using Wasm*.
- 2021 Fastly's "The edge computer project" award. Verifiable and spectre-safe sandboxing at the edge.
- 2021 Finalist, Applied Research Competition, CSAW 2021. Доверяй, но проверяй: *SFI safety for native-compiled Wasm*.
- 2020 Doctoral Award for Excellence in Research. Computer Science and Engineering, UC San Diego.
- 2020 Winner, Applied Research Competition, CSAW 2020. *Retrofitting fine grain isolation in the Firefox renderer*.
- 2020 Distinguished paper award at the USENIX Security Symposium 2020. *Retrofitting fine grain isolation in the Firefox renderer*.

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## Software

- [rlbox](#) A general purpose library sandboxing framework that supports sandboxing plugins.
- [sbx-wasm2c](#) A sandboxing WebAssembly to C compiler for library sandboxing.
- [veriwasm](#) Sandbox validator for Cranelift WebAssembly compiler.
- [swivel](#) Spectre-resistant WebAssembly compiler.

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## Talks

- Sept'22 At the Strange Loop Conference. Don't Get Owned by Your Dependencies: How Firefox Uses In-process Sandboxing To Protect Itself From Exploitable Libraries.
- Aug'22 At the Black Hat USA Conference. Don't Get Owned by Your Dependencies: How Firefox Uses In-process Sandboxing To Protect Itself From Exploitable Libraries.
- Oct'21 At the IEEE Secure Development Conference. Using RLBox to sandbox unsafe C code.
- Aug'21 At the USENIX Security Symposium. Swivel: Hardening WebAssembly against Spectre.
- Jul'21 At Intel Corp. Swivel: Hardening WebAssembly against Spectre.
- Oct'20 At the Center for Networked Systems' Research Review. RLBox: secure sandboxing for buggy application components.
- Aug'20 At the USENIX Security Symposium. Retrofitting fine grain isolation in the Firefox renderer.
- Jul'20 At Brave Software, Inc. Retrofitting fine grain isolation in the Firefox renderer.

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## Prior work experience

- Jun'21–Sept'21 **Research Intern**, Intel Corp., Portland, OR, USA (Remote).  
Designed a hardware sandboxing extension based on my research.
- Jun'20–Sept'20 **Research Intern**, Intel Corp., Portland, OR, USA (Remote).  
Integrated my sandboxing research with security projects ongoing at Intel.

Oct'13–Aug'16    **Software Development Engineer**, Microsoft Corp., Redmond, WA, USA.  
Worked in Windows telemetry. Also responsible for developer tools within our team of 8.