Nikolas Havrikov

Curriculum Vitæ

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Education

Jul 2015 – Aug 2021 **PhD in Computer Science**, *Saarland University*, Saarbrücken, Magna Cum Laude
"Grammar-Based Fuzzing Using Input Features"

Apr 2013 – Jun 2015 **Master of Science**, *Saarland University*, Saarbrücken, GPA 3.7
"Search-Based Fuzzing of Binaries"

Oct 2009 – Apr 2013 **Bachelor of Science**, *Saarland University*, Saarbrücken, GPA 3.0
"Generating XML for Search-Based Testing"

Work Experience

Since Sep 2021 **Software Engineer**, *Google Switzerland GmbH*, Zürich
- optimizing the performance of the Android TV platform
- improving the system app experience

Jun 2020 – Oct 2020 **Software Engineering Intern**, *Google Germany GmbH*, Munich
- extended the Google TV Compatibility Test Suite covering picture-in-picture functionality
- contributed to the launch of the Duo app on Google TV

May 2019 – Aug 2019 **Reliability Engineering Intern**, *Google Switzerland GmbH*, Zürich
- designed and implemented a chaos testing tool for improving reliability of Google Cloud services
- successfully integrated the approach into Google's Dataproc platform

Feb 2014 – May 2015 **Junior Software Engineer**, *Testfabrik Consulting + Solutions AG*, Saarbrücken
- developed tools for orchestration of virtual machines based on vCloud Director in Scala
- executed website crossbrowser compatibility tests with tool-support
- created Selenium-based functionality tests for websites

Dec 2013 – Mar 2014 **Research Assistant**, *Saarland University*, Supervisor: Andreas Zeller
- extended own work on *evolutionary XML test input generation*
- published a scientific paper at an international conference on software engineering

Jun 2013 – Aug 2013 **Research Assistant**, *Saarland University*, Supervisor: Andreas Zeller
- implemented a prototypical tool for finding input parsing defects in programs
- evaluated the prototype on relevant open source applications with success

Apr 2012 – Oct 2012 **Tutor**, *Saarland University*, Software Engineering Lecture, Supervisor: Andreas Zeller
- supervised three developer teams implementing software projects for university customers
- coordinated communication between team members, customers, and course organizers

Teaching

Aug 2018 – Oct 2018 **Teaching Assistant**, *Software Lab*, Saarland University
- adapted a programming task for groups of five undergraduate students
- supervised a team of eight tutors distributing responsibilities and adhoc tasks
- gave lectures on software engineering practices to a class of 150 students

Oct 2017 – Feb 2018 **Teaching Assistant**, *Lecture "Security Testing"*, Saarland University
- designed exercises for student projects
- supervised class of 20 students during implementation of exercises

Mar 2017 – Apr 2017 **Teaching Assistant**, *Block Course "Security Testing"*, Saarland University
- designed and deployed exercises for individual student projects
- implemented reference solutions for the exercises
- supervised students during implementation

Aug 2016 – Oct 2016 **Teaching Assistant**, *Software Lab*, Saarland University
- designed a programming task for groups of five to seven undergraduate students
- supervised a team of seven tutors distributing responsibilities and adhoc tasks
- gave lectures on software engineering practices to a class of 130 students

Oct 2015 – Nov 2015 **Teaching Assistant**, *Seminar "Security Testing"*, Saarland University
- managed submissions of student summaries
- created tasks for student projects

Languages

English	native-level
German	native-level
Russian	native
Ukrainian	native
French	basic
Latin	(intermediate Latin certificate)

Programming Languages and Frameworks

Most experienced with	Kotlin, Java, Scala, Python
Some experience with	Zsh, C, C++, JavaScript
Dabbled in	Bash, PHP, Ruby, Delphi
Build Tools	Gradle, Maven, sbt, ant
VCS	Git, Mercurial, SVN
Misc	vCloud Director, Selenium, LaTeX

Activities

Leadership

Jun 2016 – Sep 2019 **Board Member**, *Non-profit theater association "Thunis e.V."*
- co-organized actor training
- coordinated internal communication
- managed and extended the IT infrastructure

Mar 2017 **Organizer**, *Chair-Internal Reading Group*
Organized a reading group on good scientific practices to impart to students at the chair

Vocational

Mar 2017 and 2013 **Presenter**, *CeBIT expo*, Hannover, Germany

Jun 2016 **Artifact Evaluation Committee Member**, *ISSTA 2016*

2015 – 2021 **Academic Supervisor**, *Supervised twelve bachelor and master theses*

Hobbies

2013 – 2019 **Director/Actor**, *Thunis*, Theater Association of Saarland University
German plays "No Exit" by Jean-Paul Sartre, "Count Öderland" by Max Frisch, "Zusammengesetzt" (loosely "Composed"), "stückzahlen" (loosely "piece numbers"), "The Good Person of Szechwan" by Bertolt Brecht, Web Series "Dr. Security"

Publications

[1] Rahul Gopinath, Alexander Kampmann, Nikolas Havrikov, Ezekiel O. Soremekun, and Andreas Zeller. Abstracting failure-inducing inputs. In *ISSTA '20: 29th ACM SIGSOFT International Symposium on Software Testing and Analysis, Virtual Event, USA, July 18-22, 2020*, pages 237–248. ACM, 2020.

[2] Nikolas Havrikov. Efficient fuzz testing leveraging input, code, and execution. In *Proceedings of the 39th International Conference on Software Engineering Companion*, ICSE-C '17, pages 417–420, Piscataway, NJ, USA, 2017. IEEE Press.

[3] Nikolas Havrikov. *Grammar-Based Fuzzing Using Input Features*. PhD thesis, Saarland University, Saarbrücken, Germany, 2021.

[4] Nikolas Havrikov, Alessio Gambi, Andreas Zeller, Andrea Arcuri, and Juan Pablo Galeotti. Generating unit tests with structured system interactions. In *Proceedings of the 12th International Workshop on Automation of Software Testing*, AST '17, pages 30–33, Piscataway, NJ, USA, 2017. IEEE Press.

[5] Nikolas Havrikov, Matthias Höschele, Juan Pablo Galeotti, and Andreas Zeller. XMLMate: Evolutionary XML test generation. In *Proceedings of the 22Nd ACM SIGSOFT International Symposium on Foundations of Software Engineering*, FSE 2014, pages 719–722, New York, NY, USA, 2014. ACM.

[6] Nikolas Havrikov, Alexander Kampmann, and Andreas Zeller. From input coverage to code coverage: Systematically covering input structure with k-paths. 2021. TOSEM-2021-0220.

[7] Nikolas Havrikov and Andreas Zeller. Systematically covering input structure. In *Proceedings of the 34th ACM/IEEE International Conference on Automated Software Engineering*, ASE 2019, New York, NY, USA, 2019. ACM.

[8] Alexander Kampmann, Nikolas Havrikov, Ezekiel O. Soremekun, and Andreas Zeller. When does my program do this? Learning circumstances of software behavior. In *ESEC/FSE '20: 28th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, Virtual Event, USA, November 8-13, 2020*, pages 1228–1239. ACM, 2020.

[9] Esteban Pavese, Ezekiel O. Soremekun, Nikolas Havrikov, Lars Grunske, and Andreas Zeller. Inputs from hell: Generating uncommon inputs from common samples. *CoRR*, abs/1812.07525, 2018.

[10] Ezekiel Soremekun, Esteban Pavese, Nikolas Havrikov, Lars Grunske, and Andreas Zeller. Inputs from hell: Learning input distributions for grammar-based test generation. *IEEE Transactions on Software Engineering*, 2020.