Moeketsi Raselimo

Lauterberger Str., 45 – 12347 – Berlin, Germany

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Work Experience

Humboldt-Universität zu Berlin — **Berlin, Germany**
Postdoctoral Research Fellow — *Since July 2023*

Stellenbosch University — **Stellenbosch, South Africa**
Postdoctoral Research Fellow — *March 2023 - August 2023*

Education

Stellenbosch University — **Stellenbosch, South Africa**
PhD in Computer Science — *February 2019 - April 2023*

Stellenbosch University — **Stellenbosch, South Africa**
BSc(Honours) in Computer Science. Cum Laude — *Febuary 2018 - December 2018*

Publications

- Martin Eberlein, **Moeketsi Raselimo**, Lars Grunske. 2025. Which Inputs Trigger my Patch? APR 2025.
- **Moeketsi Raselimo** and Bernd Fischer. 2024. Spectrum-Based Rule-and Item-Level Localization of Faults in Context-Free Grammars. Under Review at the Journal of Systems and Software.
- Dirk Beyer, Lars Grunske, Matthias Kettl, Marian Lingsch-Rosenfeld, and **Moeketsi Raselimo**. 2024. P3: A Dataset of Partial Program Patches. In Proceedings of 21st International Conference on Mining Software Repositories (MSR 2024).
- **Moeketsi Raselimo**, Lars Grunske, and Bernd Fischer. 2023. Static Test Case Prioritization Strategies for Grammar-Based Testing. In Proceedings of the 38th IEEE/ACM International Conference on Automated Software Engineering Workshops (ASEW). `https://doi.org/10.1109/ASEW60602.2023.00025`.
- **Moeketsi Raselimo** and Bernd Fischer. 2023. Automatic Passive and Active Repair for Grammars. Technical Report.
- **Moeketsi Raselimo**. 2022. Fault Localization and Repair for Grammarware. PhD Thesis. Stellenbosch University.
- **Moeketsi Raselimo** and Bernd Fischer. 2021. Automatic Grammar Repair. In Proceedings of the 14th ACM SIGPLAN International Conference on Software Language Engineering (SLE '21). `https://doi.org/10.1145/3486608.3486910`.
- Chelsea Barraball, **Moeketsi Raselimo**, and Bernd Fischer. 2020. An Interactive Feedback System for Grammar Development (Tool Paper). In Proceedings of the 13th ACM SIGPLAN International Conference on Software Language Engineering (SLE '20). `https://doi.org/10.1145/3426425.3426935`.
- Phillip van Heerden, **Moeketsi Raselimo**, Konstantinos Sagonas, and Bernd Fischer. 2020. Grammar-Based Testing for Little Languages: An Experience Report with Student Compilers. In Proceedings of the 13th ACM SIGPLAN International Conference on Software Language Engineering (SLE '20). `https://doi.org/10.1145/3426425.3426946`.
- **Moeketsi Raselimo** and Bernd Fischer. 2019. Spectrum-Based Fault Localization for Context-Free Grammars. In Proceedings of the 12th ACM SIGPLAN International Conference on Software Language Engineering (SLE '19). `https://doi.org/10.1145/3357766.3359538`.

- **Moeketsi Raselimo**, Jan Taljaard, and Bernd Fischer. 2019. Breaking Parsers: Mutation-Based Generation of Programs with Guaranteed Syntax Errors. In Proceedings of the 12th ACM SIGPLAN International Conference on Software Language Engineering (SLE '19). `https://doi.org/10.1145/3357766.3359542`. **ACM Distinguished Paper Award**.

Presentations

Automatic Grammar Repair **Virtual**
SLE 2021 Conference

Spectrum-Based Fault Localization for Context-Free Grammars **Athens, Greece**
SLE 2019 Conference

Comparison of Systematic and Random Grammar-Based Test suite Construction **Stellenbosch**
SASUF 2019 Workshop

Spectrum-Based Fault Localization for Context-Free Grammars **Stellenbosch**
AC21 Workshop (Co-located with ICTAC 2018 Conference)

Projects

gfixr *Main developer*

`gfixr` is a fully automatic grammar repair tool. It takes as input a faulty grammar and test suite, applies small-scale transformations and gives as output the repaired grammar variant that is consistent with the input tests and an optional membership oracle for the target language.

glocalizr *Main developer*

`glocalizr` employs spectrum-based fault localization techniques to find buggy rules in a context-free grammar. It works on both rule- and item-level granularity. The tool supports widely used parser generator tools such as ANTLR, JAVACC and CUP. It also uses `gtestr` to extract synthetic spectra from generated tests, in cases where a black-box parser cannot be instrumented.

gtestr *Contributor*

`gtestr` is a grammar-based test-suite generation tool that can read a context-free grammar in EBNF notation and produce from this a wide range of test suites with different properties. In particular, gtestr can produce positive test suites that ensure that a variety of different grammar coverage criteria are satisfied, as well as negative test suites that ensure that the tests have a single, well-defined syntax error.

Teaching Experience

Teaching assistant *Compiler Engineering*

- July 2019 - November 2019
- July 2020 - November 2020
- February 2021 - June 2021
- February 2022 - June 2022

Tutor *Introduction to Programming I*

- February 2019 - May 2019
- February 2020 - May 2020
- March 2021 - June 2021

Tutor *Introduction to Programming II*

- July 2019 - November 2019

Tutor *Software Engineering*

- July 2021 - November 2021

Service

ICSE 2025 Conference **Ottawa, Ontario, Canada**
Program Committee

SLE 2021 Conference
Artefact Evaluation Committee Member

SPLASH 2019 Conference **Athens, Greece**
Student volunteer

Awards, Honours and Achievements

- ACM SIGPLAN Distinguished Paper Award, 2019.
- ACM travel support and 100% fee waiver for SPLASH, 2019.

Additional Information

- Programming languages and tools: Java, Python, C/C++, Haskell, Javascript, Sqlite, PostgreSQL, MySQL, Git, Docker and Maven.
- Languages: Sesotho (native), English (fluent).
- Citizenship: Lesotho.

References

Prof. Bernd Fischer **Stellenbosch University, South Africa**
PhD Supervisor *bfischer@sun.ac.za*

Prof. Konstantinos Sagonas **Uppsala University, Sweden**
Co-author *kostis@it.uu.se*

Prof. Eric Van Wyk **University of Minnesota, USA**
PhD Examiner *evw@umn.edu*