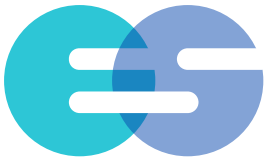
TUHH
Hamburg
University of
Technology



Debugging - CPU profiling

Seminar Report

submitted by
Lennart Brandin

Debugging – Methodology instead of Confusion
Hamburg University of Technology

May 2025

1st Examiner:
2nd Examiner:
Supervisor:

Abstract

Performance profiling is a method of analyzing where execution time is spent. Using profiling tools, it is possible to locate performance hotspots [1] which are “sections of code that, if optimized, would yield the best overall speed-up.” [2]
To achieve this, the written user code is executed and recorded as a call graph, i. e. the relationship between a function and those it is calling. Such a recording can provide information about the number of calls and time spent in each function.

Contents

Acronyms Index

***TUHH* – Hamburg University of Technology**

1 Introduction

1.1 Motivation

1.2 Usage of electronic tools

- Typst - General Visualization framework
- VSCode - Editing && Debugging
- TUHH typst ies-report template
- Google Scholar - Source discovery
- Generative AI - ChatGPT acquiring topic outline, source discovery
- Generative AI - Github Copilot code autocomplete, not used for writing passges

2 Preliminaries

3 Conclusion

Using an abbreviation like Hamburg University of Technology (TUHH) is a good idea.

Bibliography

[1] R. Bernecky, "Profiling, performance, and perfection (tutorial session)," in *Proceedings of the ACM/SIGAPL conference on APL as a tool of thought (session tutorials)* -, New York, New York, United States: ACM Press, 1989, pp. 31–52. doi: 10.1145/328877.328879.

[2] S. L. Graham, P. B. Kessler, and M. K. Mckusick, "Gprof: A call graph execution profiler," *ACM SIGPLAN Notices*, vol. 17, no. 6, pp. 120–126, Jun. 1982, doi: 10.1145/872726.806987.

[3] P. Wood, "A Survey of Performance Analysis Tools."