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Building Domain Specific Languages and Polyglot Applications with GraalVM

Presented to the Faculty of Computer Science and Mathematics
University of Applied Sciences Regensburg
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Master Computer Science

Master Thesis

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THESIS DECLARATION

ABSTRACT

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1 Introduction

Business as usual

2 Overview of GraalVM

2.1 Motivation

Why do we need Graal?

2.2 Features

2.2.1 GraalVM Compiler

Explanation and some benchmarks

2.2.2 Native Images

Explanation and some benchmarks yet again

2.2.3 Truffle Framework

Basic explanations: why is there a truffle framework and what is achievable

2.2.4 Polyglot Applications

Basic explanations: what's possible here

3 Domain Specific Languages in GraalVM

3.1 Technical Overview

How to build DSLs with GraalVM?

3.2 <INSERT NAME OF DSL>

Introduce the DSL of this thesis here 1 2 3 4 5

$$A = \{ x \mid x \in (A \cap B) \} 12345 \quad (1)$$

3.3 Implementation of <INSERT NAME OF DSL>

Highlight some key aspects of implementation

3.4 Evaluation

Evaluate the DSL and GraalVM, highlight pain points etc.

4 Integration of Domain Specific Languages

4.1 Technical Overview

How do polyglot applications technically work?

4.2 Integration of <INSERT NAME OF DSL>

Showcase how it's done using the thesis DSL

4.3 Evaluation

Evaluation how good this actually works

5 Conclusion

Business as usual