Delphi

Mining Software Ecosystems Using Static Program Analysis

Ben Hermann & Lisa Nguyen Quang Do
Project Group 2019/2020
January 28th, 2019
Evaluation in Program Analysis Research
Evaluation in Program Analysis Research
Evaluation in Program Analysis Research

New analysis

Ground truth
Evaluation in Program Analysis Research

New analysis analyzes Input Programs and is based on Ground truth.
Evaluation in Program Analysis Research

Previous analyses

New analysis

Ground truth

analyzes

analyzes

is based on

Input Programs
Evaluation in Program Analysis Research

Previous analyses

New analysis

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Specialized Microbenchmark

Input Programs
Evaluation in Program Analysis Research

Previous analyses

New analysis

Ground truth

Input Programs

analyzes

analyzes

is based on

Specialized Microbenchmark

Collection of real-world code

Input Programs is based on a Specialized Microbenchmark and a Collection of real-world code.
Evaluation in Program Analysis Research

Previous analyses analyzes New analysis analyzes Ground truth is based on

Established Evaluation Corpora

Specialized Microbenchmark

Collection of real-world code

Input Programs
Comparable Experiments

Previous analyses

New analysis

analyzes

analyzes

Input Programs
Comparable Experiments

Previous analyses → New analysis

Input Programs

analyzes

analyzes
Comparable Experiments

Previous analyses

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analyzes

Different input programs

Input Programs

analyzes
Comparable Experiments

Are the programs relevant for the analysis?

Previous analyses

New analysis

Input Programs

Different input programs
Introducing Delphi
Introducing Delphi

INDEX ALL THE CODE!
Introducing Delphi

Extraction
Introducing Delphi

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... more in development
Introducing Delphi

[Unsafe - Alloc] > 0
Introducing Delphi

Queries may act as program set descriptions

\[ \text{[Unsafe - Alloc]} > 0 \]
Introducing Delphi

Queries may act as program set descriptions

Query results may be manifested benchmarks

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Introducing Delphi

Queries may act as program set descriptions

Query results may be manifested benchmarks

Building supersets over multiple evaluations becomes easy
Introducing Delphi

Queries may act as program set descriptions

Query results may be manifested benchmarks

Building supersets over multiple evaluations becomes easy

Harmonized input format allows for re-runs with different program sets

\[ \text{[Unsafe - Alloc]} > 0 \]
Semi-Live Demo
Alpha version available publicly
Under the Hood

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Scala
Under the Hood

Web API
- Web Application
- Crawler & Analyzer
- Command-Line Interface

- npm
- AndroZoo
- Git
- Maven

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Your Task 1/2

- Extend the current very very basic Web User Interface
  - Present results in an appealing way
  - Help users to produce queries
- Allow query storing
- Produce charts and graphs out of data
- Dashboard / Newsfeed feature
Your Task 2/2

- Write new crawlers
  - Androzoo - A collection of 6 million Android apps
  - ...
- Write or integrate new analyzers
- Extend the query language
Project Group Phases
Project Group Phases
Project Group Phases
Project Group Phases

- Seminar phase
  - Lots of introductions from our side
  - Small tasks to get you started

- Coding phase
  - Follow a process
  - Code awesome things
  - Release and celebrate!
Delphi

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TECHNISCHE UNIVERSITÄT DARMSTADT
Delphi: Mining Software Ecosystems Using Static Program Analysis

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Previous Publications
