

Think Outside the Box: Exploring and Exploiting Cross-Language Optimizations in MapReduce

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ABSTRACT

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1 INTRODUCTION

RQ:

- What is the proportion of time spent in native vs. non-native job vertices?
- What are the root causes of running job vertices as non-native?
- How much of the non-native vertices can be translated to native?

2 BACKGROUND

2.1 Scope Language

2.1.1 Execution of a Scope Job.

2.2 Running C++ vs. C# Vertex

3 METHODOLOGY

3.1 Subject Programs and Artifacts

3.2 Scale of The Study

4 RQ1: NATIVE VS. NON-NATIVE TIME

5 RQ2: ROOT CAUSES OF NON-NATIVE VERTICES

- .NET Framework Calls
- User written functions
- Custom processors, reducers, combiners, extractors, etc.

6 RQ3: TRANSLATION OF C# TO C++

7 CASE STUDIES

description for each optimized job if possible

7.1 Case Study 1

7.2 Case Study 2

8 LIMITATIONS AND THREADS TO VALIDITY

Underapproximation of performance impact.

Granularity of the analysis.

Challenges for implementing more intrinsics.

9 RELATED WORK

9.1 Query Optimizations

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10 CONCLUSIONS

REFERENCES

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