

Camera Ready Summary

Conference Name

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Track Name

Main

Paper ID

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Paper Title

Spla: Generalized Sparse Linear Algebra Library with Vendor-Agnostic GPUs Acceleration

Abstract

Scalable high-performance graph analysis is a nontrivial challenge. Usage of sparse linear algebra operations as building blocks for graph analysis algorithms, which is a core idea of GraphBLAS standard, is a promising way to attack it. While it is known that sparse linear algebra operations can be efficiently implemented on GPU, full GraphBLAS implementation on GPU is a nontrivial task that is almost solved by GraphBLAST project. It is shown that utilization of GPUs for GraphBLAS implementation significantly improves performance. But GraphBLAST is not portable because it is based on Nvidia Cuda. In this work we propose Spla library which aims to solve this problem using OpenCL API for vendor-agnostic GPUs accelerated computations. Evaluation shows that the proposed solution demonstrates performance comparable with GraphBLAST, outperforming it up to 36 times in some cases, and remains portable across different GPUs vendors.

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