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**A STUDY OF AUTOMATED CODE GENERATION FOR HIGH-
PERFORMANCE OPEN CL FROM PYTHON**

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ABSTRACT

The advent of modern computing has seen an increasing demand for high-performance applications across various domains, such as scientific computing, machine learning, and data analysis. OpenCL (Open Computing Language) has emerged as a versatile framework for harnessing the power of heterogeneous computing resources, including GPUs, CPUs, and FPGAs. However, programming in OpenCL can be complex and error-prone, especially for developers with limited experience in low-level languages. This research study explores the development of an automated code generation tool that facilitates the creation of high-performance OpenCL code from Python, a widely used and accessible programming language. OpenCL is an open standard for parallel programming that enables developers to harness the computational power of various hardware devices. It is particularly valuable for accelerating data-intensive and computationally expensive tasks. However, writing efficient OpenCL code can be challenging due to the low-level nature of the language and the intricacies of managing device-specific resources.