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## **An Open-Source RISC-V-based GPGPU Accelerator for Machine Learning-based Edge Computing Applications**

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In recent years, the demand for real-time machine learning (ML)-based computing solutions has driven the rapid growth of edge computing. The adopted hardware must strike a delicate balance by providing sufficient computational power to meet stringent real-time constraints while minimizing energy consumption. General-purpose graphics processing units (GPGPU) are a commonly adopted solution to maximize the data parallelism of ML algorithms thanks to more specialized hardware.

This work presents an open-source RISC-V-based GPGPU accelerator designed to support research in the ML-based edge computing domain. The accelerator features a low-power GPGPU streaming multiprocessor (SM) and offers two selectable memory hierarchies: cache-based and scratchpad-based. Its high configurability, regarding the number of threads, warps, and memory sizes, enables matching specific application requirements. The accelerator has been integrated into our in-house-designed eXtensible Heterogeneous Energy Efficient Platform (X-HEEP) microcontroller to improve its data processing capabilities and provide a real-world integration example.

### **What of the following keywords match your abstract best?**

GPUs

### **Please tick if you are a PhD student and wish to take part to the poster prize competition!**

I am a PhD student

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