Mithra: Controlling Quality Tradeoffs in Approximate Acceleration

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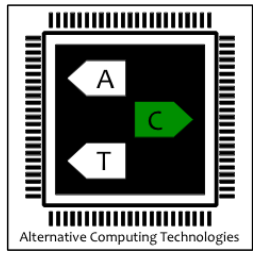


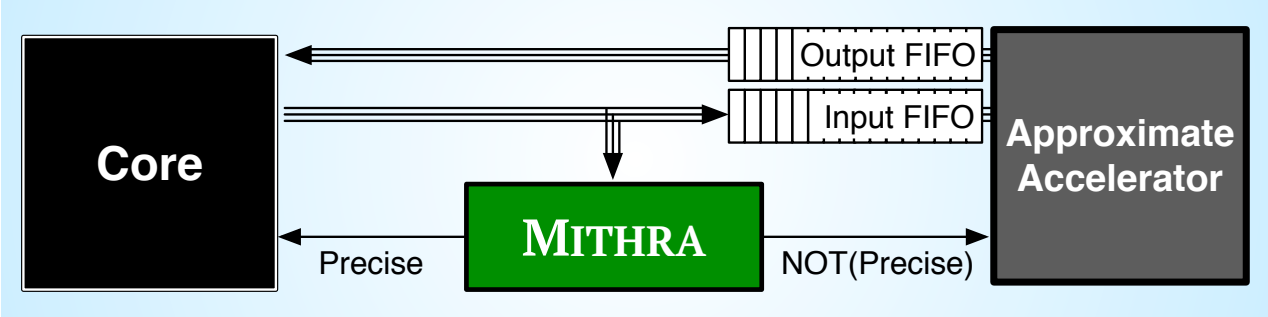
Overview

Approximate Acceleration

- Core invokes approximate accelerator in lieu of safe-to-approximate function. Always invoking the accelerator leads to **fixed degree of error**
- Only a small number of invocations lead to large error
- We introduce MITHRA, a mechanism that tries to only filter accelerator invocations that lead to large error
- MITRA reduces error while saving benefits from approximate acceleration

Architectural Overview

- Mithra sits between core and approximate accelerator
- Idea is that $\text{Output}_{\text{accelerator}}$ is only ƒ(accelerator inputs)



Thank you