

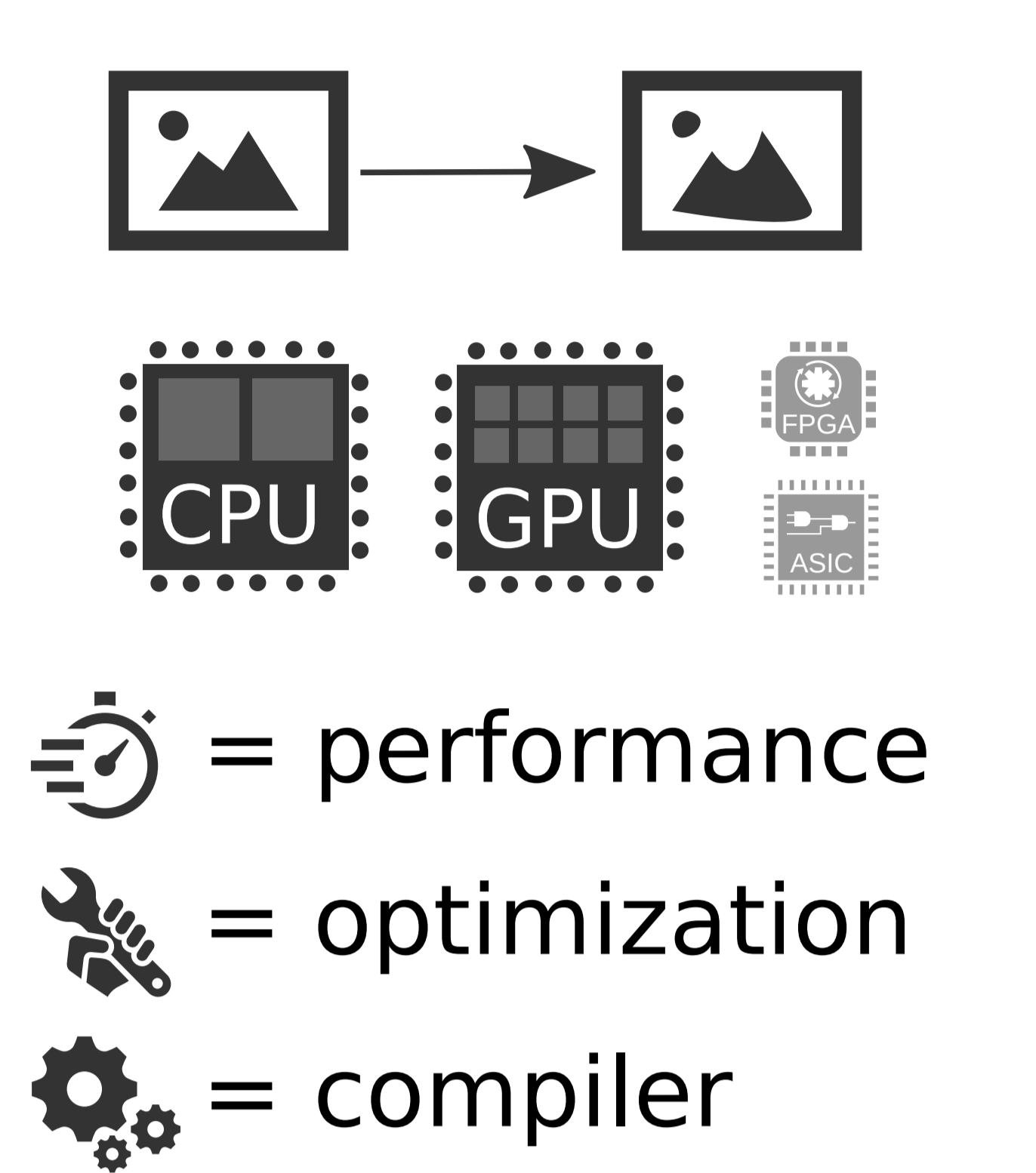
An Extensible Compiler to Optimize Image Processing

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Optimizing Image Processing is Hard



Performance is vital But manual optimization is costly

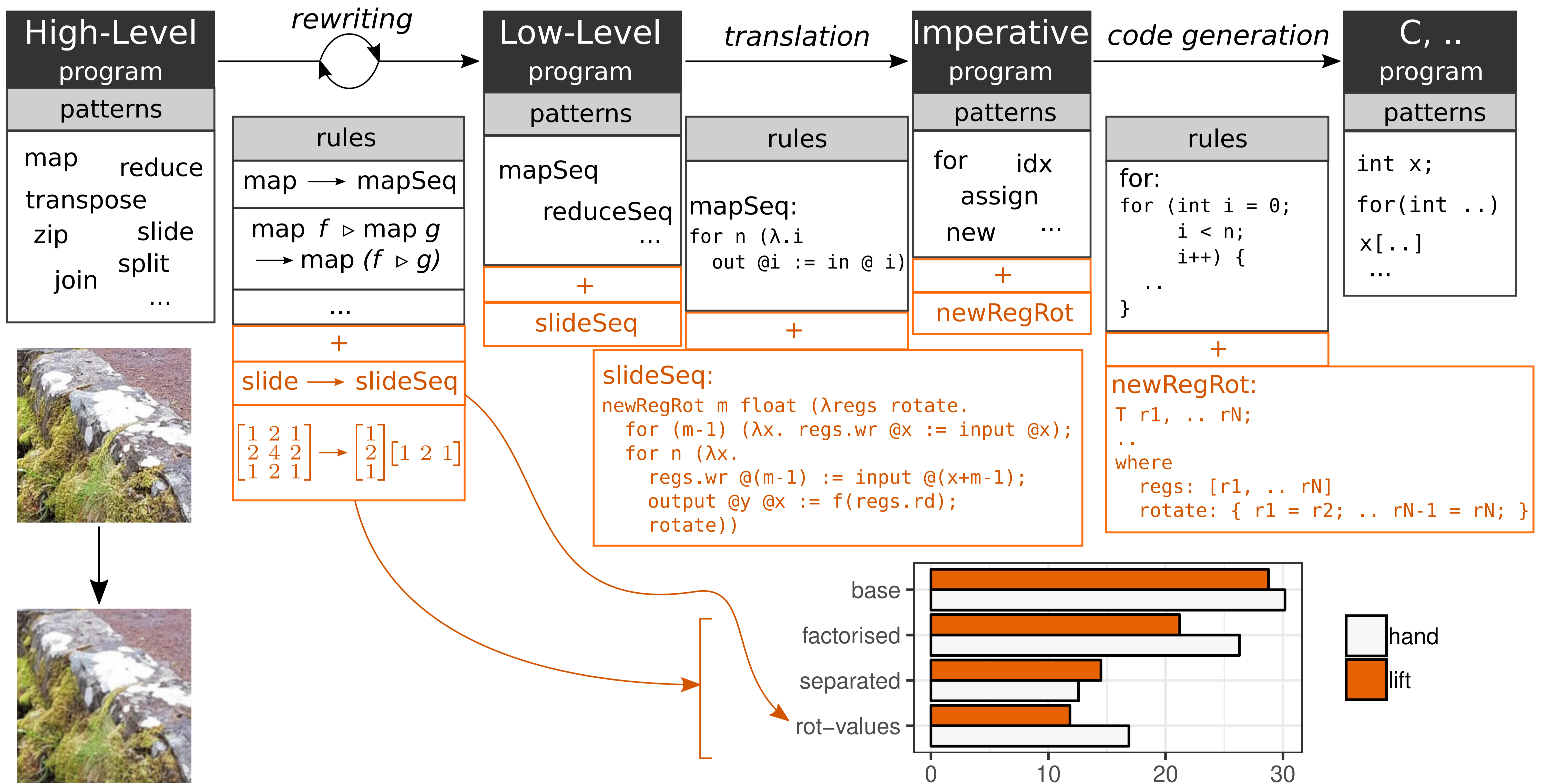
Domain-specific compilers automate many optimizations

But they lack flexibility as hardware and optimizations evolve



We promote a more flexible compiler, extensible with optimizations

Extending Lift with Image Processing Optimizations



Case Study: Binomial Filter
blur, reduces noise and detail

Median runtime of Binomial Filter Variants
ms, 1920x1080 pixels, ARM CPU

Better than State-of-the-Art Image Processing Compilers?

+ = Preliminary results demonstrate how extending Lift improves runtime

+ + We currently work on more optimizations and parallelism



We intend to show the benefits of our approach compared to the state-of-the-art (e.g. Halide)