Porting software to hardware using XLS/DSLX

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Abstract—**DSLX is a dataflow-oriented functional language used to build hardware that can also run effectively as host software.**

DSLX's syntax resembles Rust, while being an immutable expression-based dataflow DSL and adding hardware-oriented features like arbitrary bitwidths.

Using the XLS (Accelerated HW Synthesis) toolchain, DSLX can target to XLS IR intermediate format to enable development flows for FPGAs and ASICs (thru Verilog conversation) or native-speed execution (thru LLVM-based JIT compilation).

In this presentation[1], we go step-by-step thru the process of *Porting software to hardware* by rewriting a C routine in DSLX and showing how to integrate the XLS toolchain in a typical FLOSS FPGA flow to synthesize it on a budget FPGA board like the FoMU.

Index Terms—**hardware, dsl, fpga**

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[1]Submitted in the *Work in Progress* category.