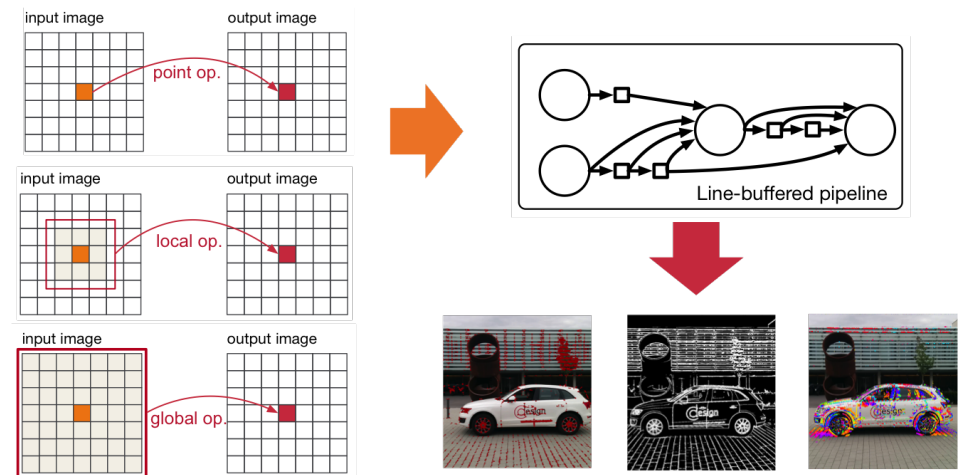


HiWi: Computer Vision with FPGAs and C++

Field Programmable Gate Arrays (FPGAs) are proved to be among the most suitable architectures for image processing applications. Describing an application-specific hardware via Verilog HDL or VHDL is time-consuming and error-prone. Recent advancements in High-Level Synthesis (HLS) promise to solve this problem. Yet, very few HLS-based libraries exist to enable FPGAs for software programmers.



This work will focus on development of an image processing library for the Xilinx FPGAs. Thereby, a policy-based C++ template library will be developed for Vivado-HLS. The final work should be polished to be shared as an open-source project.

The main tasks are:

- understanding the basic abstractions of image processing and their efficient FPGA implementations
- developing a well-written C++ library
- benchmarking the library with sample applications

Required skills: Self Learning, Good knowledge of C++ and, Understanding of FPGA design

Nature of work: Theory (30 %), Conception (30 %), Implementation (40 %)

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