BEng Project Mission Statement

Acceleration of LU Decomposition on FPGAs

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# Supervisor: Dr Danial Chitnis

# Background

Simulation Program with Integrated Circuit Emphasis or SPICE has now been widely used in the IC design and verification. Solving of sparse matrices by LU decomposition often takes up the most of the SPICE simulation time. These sparse-matrix computation is hard to parallelize on regular processors due to the irregular structure of the matrices. Modern FPGAs, however, can handle this sparse-matrix computation due to its flexible reconfigurability.

# Aim

* To implement LU decomposition with C++.
* To implement LU decomposition on FPGA.
* Compare the power consumption and efficiency of the algorithm on FPGA with that on GPU.

# Background Knowledge

* C/C++
* Verilog

# Resources

* Xilinx
* Intel oneAPI

The supervisor and student are satisfied that this project is suitable for performance and assessment in accordance with the guidelines of the course documentation.

Signed

Yichen Zhang

Dr Danial Chitnis

Date: