



Senior Design Project Proposal

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1. Project title: **FPGARoute: A new routing algorithm for FPGA design**

2. Project description:

FPGA design is done using computer aided design (CAD) tools. These CAD tools help to automate the design process. One of the main steps in a typical CAD tool for FPGAs is routing. During routing all interconnects of the circuit implemented on the FPGA are routed using wires and configurable switches. The goal of this project is to develop a new routing algorithm to improve the quality of the routing step (as timing and number of tracks utilized). This is a project for a two-student team.

3. Project steps and design objectives:

The following are the main steps.

1. Reading and learning the C source code of an existing FPGA CAD tool (VPR). Focus is on the routing implementation. Identification of the main code architecture for the new routing algorithm. The objective is to improve quality of the final routed circuit.
2. Implementation in C/C++. Collecting results and comparing to previous routing approaches on a set of available benchmarks/testcases.
3. Maintain a project website.

4. Prerequisites:

Experience with programming in C/C++. Knowledge of algorithm design and analysis would be a plus.