

CS 516000 FPGA Architecture & CAD

Creative Assignment (Due: Dec. 18, 2024)

Design an assignment suitable for students taking the FPGA CAD and Architecture course to enhance the learning outcome. It can either be

- (i) an assignment with concept questions, computation questions, and/or algorithm design questions based on the content of the lectures; or
- (ii) a reading assignment with a few questions to test the readers' understanding of a chosen paper from the list below.

You should design your own questions and also provide the answers to the proposed questions. Note that well-thought-out or challenging questions with correct solutions will earn higher grade than trivial ones. You may provide a few questions with varying difficulties.

For option (ii), you may select one paper to base on from the following three.

1. "NetCracker: A peek into the routing architecture of Xilinx 7-Series FPGAs." In *The 2021 ACM/SIGDA International Symposium on Field-Programmable Gate Arrays*, pp. 11-22.
2. "RLPlace: Using reinforcement learning and smart perturbations to optimize FPGA placement." *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems* 41, no. 8 (2021): 2532-2545.
3. "Better Together: Combining Analytical and Annealing Methods for FPGA Placement." In *2024 34th International Conference on Field-Programmable Logic and Applications (FPL)*, pp. 43-52.

Please submit your work through eeclass.

(Your questions may be selected to be included in some future assignments of the course, and if so, we will credit you as the source! We are looking forward to some interesting questions from you.)