

Questions on *mfs*

1. Is *mfs* a state-of-the-art method for logic synthesis with EXDCs? Is there any other method to simplify with EXDCs?
2. Is *mfs* only designed for FPGAs? Does it also work for ASICs?

Questions on my research with *mfs*

I want to generate an approximate circuit by approximating its EXDCs. I start from the *mfs* method in the paper *Scalable Don't-Care-Based Logic Optimization and Resynthesis*. The **only** change is the structure of miter in Figure 1 (the Figure 4.2.1 in the *mfs* paper).

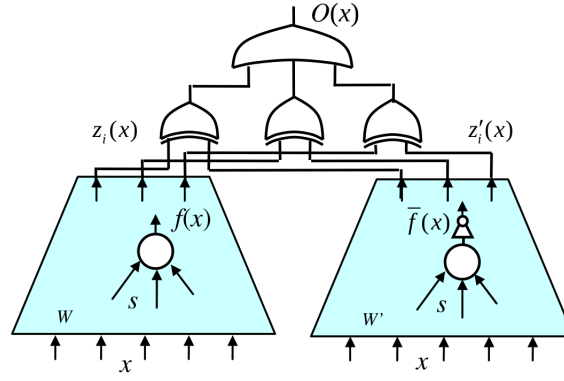


Figure 1: Original miter for care set computation

Instead of constructing such a miter in Figure 1 to represent the care set, I simulate the circuit for N rounds and generate a set of patterns for the window inputs \mathbf{x} . Those patterns are treated as the **approximate care set** and used to synthesize the approximate circuit.

For example, the window inputs are A , B and C , and three rounds simulation patterns for ABC are 010, 111, 101. Then I use $O(x) = \overline{A}B\overline{C} + ABC + A\overline{B}C$ to represent the approximate care set.

1. Is it reasonable to change care set on window inputs?
2. I have an interesting observation on *c880* with my idea:

In most cases, for some values of N within a continuous interval, the final approximate circuit does not change. For example, I increase N from 192 to 256, the results are same.

But the circuit might be simplified dramatically due to the addition of one simulation frame. For example, when N change from 256 to 257 (the first 256 inputs patterns for simulation are same), the error rate of the final circuit changes greatly (from 0.2% to 5%).

Is the observation caused by the property of *mfs*?