

# OSU ECEN 4233 HSCA, Spring 2023

## HW 3: Multipliers

Instructor: James E. Stine, Jr.

Assigned: Friday, 2/24, 2023

Due **Friday 3/3, 2023** (midnight)

Handin: <http://canvas.okstate.edu>

Design the following items:

1. Using the Perl CSAM generator, generate an array multiplier for  $n = 16$  and  $m = 8$  in Verilog. Modify the Verilog to handle two's complement numbers and test with 256 valid two's complement vectors. Hint: do not shortcut the mathematical process – formulate the equation just as we did in class to understand how to modify the Verilog to handle two's complement arithmetic.

Please use your DLD text [1] as well as notes on Canvas to help you get started. You can obtain Perl for your machine at <https://www.perl.org/get.html>. To get the CSAM Perl script to run, you may have to modify the location of the perl engine on the first line. Contact me, if needed, for help.

## References

- [1] S. Harris and D. Harris, *Digital Design and Computer Architecture, RISC-V Edition*. Elsevier Science, 2021.