University of Pittsburgh
Department of Electrical and Computer Engineering
ECE 1895: Junior Design Fundamentals
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Assignment 5: 555 Design Project Verification

For this assignment, you have to show results from the steps you took to verify your design in SPICE and using circuit prototypes on a breadboard

SPICE Verification

To verify your design using SPICE, please do the following

- You must, at a minimum, simulate the 555 timer as it is used in your design
- Aim to simulate as much of your design as possible, preferably the entire circuit
- For some circuit components, you may have to search the internet and/or vendor's websites for SPICE models
- If SPICE models are unavailable, you may have to be creative in the way you choose to model your design. For example, since SPICE is an electrical simulator, you cannot simulate the pressing of a button or illumination of LEDs. However, you can model those components by the voltages they generate and currents that flow through them.

You must carry out enough simulations such that one would be convinced that your design will function when fabricated.

Breadboard Prototype

To verify your design as a circuit prototype, please consider the fowling

- Build the circuit incrementally, start by constructing the 555 timer circuit used in your design
- Verify the 555 timer using the oscilloscope, LEDs, or some other valid verification method. If you choose to use an oscilloscope, the waveform you should expect will depend on the operating mode of the 555 timer. Based on the verification method you choose, it should be clear that the schematic you chose for your design with your modification work properly.
- Build and verify other sub circuits within your design if parts are available for you to do so.

Submission

On the Canvas site, submit a brief PDF document that describes your efforts to verify your design before having it fabricated. Make sure to include images of simulation schematics, waveforms, results, and images of any circuit prototypes built and measurements made.