Alexander Lee

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EDUCATION

University of California, San Diego San Diego, CA
B.S Computer Engineering June 2024
Cumulative GPA: 3.69
Relevant Coursework: Introduction to Computer Architecture, Components and Design Techniques for Digital Systems, Components and Circuits Laboratory, Linear System Fundamentals, Introduction to Analog Design, Digital Circuits

PROJECTS

Personal Microprocessor
- Designed a customized Microprocessor using System Verilog that does error correction using FEC to detect up to 2 bit errors and fixes 1 bit error codes.
- Created an assembly script that creates parity bits which would be incorporated for the FEC
- Coded a python script to convert a personalized assembly instructions into 8 bit machine code to be parsed through the Microprocessor
- Utilizes a testbench to debug and detect any errors with simulations of 0, 1, 2 bit error injections

Convolutional Viterbi Encoder/Decoder
- Designed an Encoder using Viterbi's algorithm by using a Mealy FSM
- Designed a Decoder with multiple different units including Trace Back Unit, Branch Metric Computation Block, etc
- Created testbenches to inject errors into Encoder/Decoder to test robustness of Encoder and Decoder

Simple FF Schematic
- Constructed a schematic using Flip Flops and Nor Gate
- Built a testbench to validate functionalities of the FF's and NOR Gate
- Used parametric sweeping in order to discover and validate the minimum setup and hold times to theoretical setup/hold times

Mosfet Amplifier
- Conducted simulations using pSpice on circuits with MOSFETs to calculate Bias Point parameters, circuit voltage gain, and input/output resistances
- Built the circuit and used an oscilloscope to analyze output sinusoidal waveforms over a few periods to verify observations with simulations

SKILLS

Tools & Technologies: Oscilloscopes, Cadence Virtuoso, Model Sim, Quartus Prime, pSpice
Languages: System Verilog, x86 Assembly, C, C++, Python, MATLAB