

# Pratyay Rudravaram

[pratyay.org](http://pratyay.org) | [pratyay2@illinois.edu](mailto:pratyay2@illinois.edu) | [linkedin.com/in/pratyaygopal](https://linkedin.com/in/pratyaygopal) | [github.com/pratyaygopal](https://github.com/pratyaygopal) | US Citizen

## EDUCATION

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### University Of Illinois Urbana Champaign

GPA: 3.7/4.0

*Bachelor of Science in Computer Engineering, Minor in Mathematics*

*December 2026*

**Relevant Coursework:** Computer Organization and Design, FPGA, Operating Systems, Digital Design, Logic Synthesis, Parallel Programming, Data Structures, Electronics, Analog Signal Processing

## EXPERIENCE

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### RTL Verification Intern, Deepgrid Semi

June 2025 - July 2025

- Developed a testing strategy to verify 5 modules of an open-source hardware accelerator using executed SystemVerilog UVM-esqe testbenches while ensuring 100% functional correctness and simulation coverage
- Implemented 4 self-checking testbenches with scoreboard mechanisms and functional coverage models.
- Integrated Vivado-based synthesis and implementation flow to validate FPGA compliance and performance.

### Undergraduate Teaching Assistant, ECE385(FPGA)

Jan 2025 – Present

- Hosted office hours for course's FPGA projects including VGA text controller and RISC processor.
- Moderated the 1000+ members class discord server and clarified student questions on SV and FPGA testing.
- Conducted demos, reviewed SystemVerilog testbenches, and facilitated hardware debugging and verification.

### President, ACM SIGARCH@UIUC

Aug 2024 - Present

- Officer and Workshop Lead for UIUC's premier computer architecture student organization.
- Designing workshops to introduce students to RTL design and simulation, computer architecture and ISAs.
- Organized meetings to discuss papers on topics like branch prediction, and cache coherence.

### PCB Design Intern, Apollo Computing Laboratories

June 2024 - Aug 2024

- Developed a 2-layer 8-channel power delivery board to enable high availability data-center applications.
- Designed and implemented hardware to control power supply to a server, ensuring precise control.
- Documented design process, BOMs, and test procedures for future manufacturing and certification.

## PROJECTS

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### Superscalar Out-of-Order RISC-V CPU | [pratyay.org/docs/ooo.pdf](http://pratyay.org/docs/ooo.pdf)

- Created a speculative out-of-order RISC-V CPU with an ERR architecture, implementing the RV32IM spec.
- Supports upto 2 instruction commits per cycle, multiple integer execution units, parametric multiplier/div, etc.
- Synthesized dual-issue/commit core with L0+L1 cache on FreePDK's 45nm process node at 525MHz
- Achieved exeptional IPC ~0.67 on varous assembly benchmarks like coremark, aes-sha hashing and mergesort

### FPGA-Based Video Game – Spartan-7 Board | [pratyay.org/docs/fnaf.pdf](http://pratyay.org/docs/fnaf.pdf)

- Developed a modified port of Five Nights at Freddy's on a Spartan-7 FPGA, achieving real-time gameplay.
- Implemented and integrated an SPI-based keyboard interface supporting up to six simultaneous key presses.
- Designed game logic, randomized seed selection and optimized scalable graphics within 270 KiloBytes of RAM.
- Recognized as one of the best projects in ECE 385 and showcased for its technical complexity.

### Music synthesizer | [pratyay.org/docs/synth.pdf](http://pratyay.org/docs/synth.pdf)

- Designed and Implemented 4 modules for a fully modular music synthesizer for the ECE198 Honors lab.
- Used Falstad for design and worked with electrical workbench tools for testing.

### Temperature Regulation Calibrator | [github.com/pratyaygopal/Thermocouple-Simulator](https://github.com/pratyaygopal/Thermocouple-Simulator)

- Built a proof of concept of an affordable, temperature calibrator using thermocouples and Raspberry Pi.
- Ran 100+ simulations of the ADC/DAC and recorded data to ensure minimal variance in the output voltage.
- Automated Linux-based data collection workflows using Bash scripting, improving efficiency across test runs.

## TECHNICAL SKILLS

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**Languages:** SystemVerilog, Verilog, Bash, Assembly, C, C++, VHDL, Python, Java

**Tools:** Git, Intel Quartus, Xilinx Vivado, VS Code, Verdi, VCS, Verilator, Linux

**Protocols:** AXI-4, AXI Stream, SPI, TCP, UDP, UART, I2C

**Lab Tools:** Falstad, Arduino, Oscilloscopes, Raspberry Pi, KICAD, ORCAD, PADS