Prakhar Gupta

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EDUCATION

University of Illinois Urbana Champaign — Expected: 2026
Computer Engineering, B.S. , James Scholar — *GPA: 3.7/4.0*
Coursework: Operating Systems, DSP, Systems Programming, Data Structures & Algorithims, Neural Circuits and Systems

SKILLS

- **Languages:** Python, C, C++, SystemVerilog, Assembly, JavaScript
- **General:** Docker, Linux, Bash, CMake, Git, Node.js

WORK EXPERIENCE

SPIN Intern — Jun 2024 - Present
National Center for Supercomputing Applications
- Deployed XALT to track user library usage on a HPC system, by interrupting the linker with custom hooks
- Configured toolchain to track libraries in user executables utilizing GCC, Clang, NVCC, and Python environments
- Integrated MySQL Database with a TIG Stack Dashboard

Course Assistant — Jan 2024 - Present
Honors Analog Signal Processing
- Organized weekly lectures, and office hours to assist students with queries on advanced course material.

Undergraduate Research Assistant — Jan 2023 - Present
Mobility and Fall Prevention Research Laboratory
- Deployed Scientific computing pipeline and accelerated performance using cupy and numba.
- Wrote bash scripts to automate data updates, and conda environment maintenance on a HPC environment
- Developed, tested, and assembled a number of custom wireless sensors for clinical studies.
- Maintained codebase for data acquisition from medical instrumentation over serial ports using Vizard and PySerial
- Worked on multiple research projects in healthcare technology

Full Stack Intern — Jun - Aug 2023
Indian Institute of Technology
- Developed front-end user systems and the authorization microservice for a full-scale internal platform
- Implemented end-to-end services within an MVC architecture using Express, MongoDB, and other full-stack toolkits
- Wrote and tested API endpoints with Postman, and implemented a real-time pub-sub service with websockets

IT Consultant (L2) — Sep 2022 - April 2023
Engineering IT - University of Illinois
- Used sysadmin tools including AD, SCCM, and MECM to configure and support enterprise PC networks
- Worked with automated imaging build and deploy tools in Jenkins. Used IPAM for subnet management
- Configured drivers, and security settings for servers, remote containerization service, and other campus infrastructure

PROJECTS

Linux-like Kernel	Developed a kernel from scratch for a single-core x86 system. Implemented hardware drivers, paging, interrupt support, filesystem, syscalls, and concurrency through a round-robin scheduler. Implemented UART PvP TicTacToe and Soundblasters (3rd place in design competition)
DSP Harness	Working on a real-time DSP harness on a dual-core cortex M0+ system to support digital filters via user-provided Cython function references. Configured DMA and SAR ADC. Integrated FreeRTOS SMP scheduler to meet hard timing deadlines.
TENG sensing device	Designed a circuit for a sensor using Tribo-Electric Nano Generator. Used op-amp and diodes to stabilize current output and perform 2-channel signal acquisition. Performed ADC and data logging on ESP32-C2. Implementing a mesh-network for distributed sensing devices.
Open-Source at Illinois	Organized workshops to increase contributions to FOSS and popularize linux usage. Led project teams to build projects including a compute cluster, and computer vision project. Handled funding as well.
EV Concept	Configured and set up docker containers and ROS nodes for Nvidia Jetsons and PCs.