Prakhar Gupta

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Education

University of Illinois Urbana Champaign Expected: 2026
Computer Engineering, B.S. , James Scholar, Dean's List *GPA: 3.8/4.0*
Coursework: Operating Systems, DSP, Systems Programming, Data Structures & Algorithims, Neural Circuits and Systems

Skills

- **Languages:** Python, C, C++, SystemVerilog, Assembly, JavaScript
- **Hardware:** STM32, USB, UART, Vivado
- **Libraries/Frameworks:** ROS, PyTorch, Docker, Linux, Git, Node.js

Work Experience

- **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 to an HPC cluster. Accelerated performance using cupy and numba.
  - Wrote scripts to perform large-scale data processing, visualization, and to automate synchronization in datasets.
  - 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 linux kernel from scratch for a single core x86 system. Implemented hardware drivers, paging, interrupt support, filesystem, POSIX syscalls, and concurrency through a round-robin scheduler

DSP Harness Working on a real-time DSP harness on a RP2040 to support custom filters via user-provided Cython function references. Configured DMA and SAR ADC to free up CPU cycles. Implemented synchronization support for memory operations for dual-core system.

TENG sensing device Designed a sensor for a 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 STM32. Designed PCB in Ki-Cad.

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.

Lapsonix Designed a prototype utilizing the TI ULC1001 to clear vision in laparoscopic camera probes for surgical procedures. Awarded $5000 by Carle College of Medicine

EV Concept Configured and set up docker containers and ROS nodes for Nvidia Jetsons and PCs.