# Krishnan Shankar

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## Education

**University of Illinois Urbana-Champaign** — Expected Graduation: May 2027
*Bachelor of Science in Computer Engineering* — GPA: **4.0/4.0**

- Current Coursework: **ECE 391** Computer Systems/OS Design, **ECE 385** Digital Systems/FPGA Lab
- Past Coursework: **CS 225** Data Structures, **ECE 220H** Computer Systems Programming, **ECE 198H** Honors Project

**Thomas Jefferson High School for Science & Technology** — Fairfax, VA
*Fairfax County Public Schools, Advanced Studies Diploma* — GPA: **4.467/4.0**

- Coursework: Artificial Intelligence 1 & 2 (**A**,**A**), Machine Learning 1 & 2 (**A**,**A**), Robotic Systems (**A**), Robot Automation (**A**), Digital Electronics (**A**), Analog Electronics (**A**), Engineering Senior Research Project (**A**)

## Work Experience

**Quantum Computing Student Researcher** — June 2025 — Present
The MITRE Corporation — *McLean, VA*

- Derived a model (with 15+ variables) from scratch to relate quantum computer characteristics to real-world effectiveness
- Determined quantitative requirements for quantum computers to **crack RSA 2048 encryption**
- Presented this research in multiple company-wide briefings, and started writing a research paper

**Networking/Telecommunications Student Researcher** — June 2023 — May 2025
The MITRE Corporation — *McLean, VA*

- Designed and built a **novel 5G proxy** to improve speed/bandwidth for non-5G access to 5G networks
- Integrated the proxy into a real US government application, achieving a **99.93% reduction** in connection time
- Used Ansible, Python, and Bash scripting to automate deployment of the proxy (and other parts of 5G infrastructure)
- Presented this innovation in numerous company-wide briefings and sponsor presentations

**Lead Student Systems Administrator** — Jun 2021 — Present
TJ Computer Systems Lab, Fairfax County Public Schools — *Alexandria, VA*

- Configured a high-availability, triple-replicated network filesystem across 5 servers using Ceph and NFS
  - The system now serves over **2000 teachers/students** and securely stores over **200TB of data**
- Developed Turn-In, a code autograder built with Django that is now used in every computer science class at TJ
  - Over **460,000 student submissions** have been automatically graded since September 2022
- Managed and improved the TJ Intranet, a school-wide hub used for club signups, free printing, bus tracking, and more
- Also responsible for a 50+ node compute cluster, a Docker-based website hosting platform, and self-hosted mailservers

## Extracurricular Activities

**Chair**, GNU/Linux User Group @ UIUC — May 2025 — Present

**Helper**, SIGPwny (Cybersecurity @ UIUC) — Apr 2025 — Present

- Helped build a secure satellite TV system, using Rust, for MITRE's eCTF competition (placed 5th internationally)

**Club President**, TJ Unmanned Aerial Vehicle — Feb 2021 — Aug 2024

- Designed and integrated a **triple-radio communications system** for reliable flight control and fast image transfer
- Developed a custom ground station using Flask and React for telemetry, object detection/classification, and payload drop

## Projects

- A custom NixOS configuration to declaratively manage the OS, software, and dotfiles for my PC and laptop
- Strife, an open-source clone of modern chat apps like Discord/Slack, built from scratch with Django and websockets
- 20+ Hackathon projects (built with a team), 15+ desktop/terminal games, 10+ custom websites, and so much more!

## Technical Skills

- **Languages**: **Python** (Django, Flask, PyTorch), **Rust**, Nix, SystemVerilog, C, C++, Bash, JavaScript, Go, Java
- **Technologies**: **Linux** (NixOS, Debian/Ubuntu, RHEL, Raspberry Pi), **Git** (GitHub, GitLab), Ansible, Docker, Kubernetes
- **Full-Stack Web Development**: Django/Flask, NodeJS, Svelte, React, HTML/CSS/JavaScript, SQL, Firebase