

# 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, Artificial Intelligence 2, Machine Learning 1, Machine Learning 2, Robotic Systems, Robot Automation, Digital Electronics, Analog Electronics, Engineering Senior Research Project

## WORK EXPERIENCE

### Emerging Technologies Student Researcher

Jun 2023 — Present

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 first connection time
- Used Ansible, Python, and Bash scripting to automate deployment of the proxy (and other parts of 5G infrastructure)
- Derived a model (with 15+ variables) from scratch to relate quantum computer characteristics to real-world effectiveness
- Used the model to determine quantitative requirements for quantum computers to **crack RSA 2048 encryption**
- Presented in six company-wide briefings and two sponsor presentations, started writing a research paper for publication

### 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 students and faculty** 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 extracurricular activity signups, bus tracking, and more
- Worked on and responsible for a 50+ node high-performance computing (HPC) cluster, a Docker-based website hosting platform, a centralized authentication system (LDAP, Kerberos), DNS/DHCP configuration, and self-hosted mailservers

## EXTRACURRICULAR ACTIVITIES

### Chair - GNU/Linux User Group @ UIUC

May 2025 — Present

### Embedded Team Lead, Purple Team Lead - 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 (TJ UAV)

Feb 2021 — Aug 2024

- Designed and integrated a **triple-radio communications system**, using a 900MHz RFD900x for autonomous flight and telemetry, a 2.4GHz RC transmitter for manual control, and a 5GHz Ubiquiti Bullet WiFi link for 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