Sanjit Kumar

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EDUCATION:

University of Illinois Urbana-Champaign, *Master of Computer Science* **GPA: 3.89/4.00** | Aug 2022–**May 2024**

Relevant Coursework: Distributed Systems, OS Design, Artificial Intelligence, ML and Data Systems, Data Mining, Advanced Software Engineering Topics, Interactive Computer Graphics, Fault Tolerant Data Systems.

Vellore Institute of Technology, *Bachelor of Technology in Computer Science and Engineering* **GPA: 3.85/4.00** | Jul 2018–**May 2022**

Relevant Coursework: Data Structures and Algorithms, Database Management Systems, Object Oriented Programming, Web Programming, Computer Networks, Graph Theory and Social Networks, Parallel Programming.

SKILLS:

- **Programming Languages:** Python, C++, Java, C, Javascript
- **Databases:** MySQL, MongoDB, Redis, Elasticsearch
- **Web Technologies:** ReactJS, Node.js, Express.js, PHP
- **Other Technologies:** Apache Kafka, Hadoop, Kibana, Docker, AWS, Linux Kernel, Bash, Data Plane Development Kit, OpenGL, WebGL, PyTorch, Grafana, JavaFX.

EXPERIENCE:

University of Illinois Urbana Champaign, ***Graduate Teaching Assistant*** **C++, Go | Jan 2024 - Present | Champaign, IL**

- Worked with Dr. Radhika Mittal on the course CS425: **Distributed Systems** to provide industry relevant lessons for 200+ graduate/undergraduate students. Held bi-weekly office hours and assessed homework and projects.
- Mentored students to build distributed & networked applications projects (reliable multicasting, consensus via raft, consistent transactions).

Aviz Networks Inc, *Fall Software Engineer Intern* **C, Python, Redis| Sep 2023 – Nov 2023| San Jose, CA**

- Developed and integrated a web UI, REST API, and Redis DB Cache for a C-based Network Packet Collector.
- Optimized and performance-tuned the packet collector pipeline via payload batching. Achieved a 3x improvement in throughput and 50% reduction in latency.
- Automated the configuration, build and execution of the packet collector with Bash scripts and Python.

Aviz Networks Inc, ***Summer Software Engineer Intern*** **C++, Python| May 2023 – Aug 2023| San Jose, CA**

- Designed and developed a C++ based scalable network packet analyzer system. System tapped packets from high throughput network traffic from data centers to extract and stream metadata information.
- Leveraged scalable event processing systems like Kafka and Elasticsearch for data pipelining and downstream analytics.
- Benchmarked performance on physical network devices with software-based (Scapy) and hardware-based (Ixia) load generator for scalability testing.
- Used a Kafka consumer to integrate a REST API with the system for selective packet capture and data sink integrations.

WebKnot Technologies, *Full Stack Developer Intern* **ReactJS, Node.js | Nov 2020 – Dec 2020 | Bangalore, India**

- Integrated custom Tensorflow object detection models with Shinobi, an open-source CCTV framework.
- Developed UI with ReactJS and wrote REST API endpoints with node.js and Express.js for two different MERN stack applications.

PROJECTS:

Distributed ML Inference Job Scheduler GitHub **| Java, Python, PyTorch**

- Designed a distributed job scheduler system for ML inference tasks built on top of 10 Linux VMs from scratch using Java and Python.
- Uses a real-time work scheduling algorithm to optimize query rate for ResNet and ImageNet classification tasks.
- Includes a distributed data logging service, distributed group membership protocol and failure detector, a distributed files system.

Yarn Inventory Manager GitHub **| ReactJS, Node.js, MongoDB**

- MERN Stack web application that works as a website/catalogue for a textile yarn trading firm to receive product inquiries. Engineered visualization features for business Intelligence with the data. Also designed and developed an alternative JavaFX UI.

Modified Banker's Algorithm with Software Interrupts GitHub **| C, Bash**

- Enhanced the Banker's Algorithm to simulate standard operations but also manage OS software interrupts with a circular queue. Implemented the algorithm using a multi-threaded approach with the POSIX library in C.

WildSprint: Wildlife Fundraising Platform *(1st Place Ethereum Track – DevSpace '20 Hack)* GitHub **| Node.js, ReactJS, Solidity**

- Developed a MERN stack fundraising platform to raise funds via cryptocurrency (wrote smart contracts to receive ETH coin).
- Built a live stream feature through Dyte SDK integration. Livestreams of wildlife in national parks to incentivize donations.

RESEARCH EXPEREINCE:

Internet of Things Security: Attacks, Solutions, Strengths and Limitations Link **| Sep 2021**

International Conference on Artificial Intelligence and Machine Vision, IEEE

- Presented a comparative analysis of benchmarks between latest security frameworks in then-recent IoT literature while advised by Dr. Anil Kumar Kakelli.
- Categorically classified and critiqued existing IoT security frameworks based on their approaches to address the threat of malignant nodes in heterogenous device networks and general strengths/limitations.