Dev Singh

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Education

University of Illinois Urbana-Champaign — Urbana, IL

Master of Computer Science — *August 2025 – May 2026*

Bachelor of Science in Computer Science (Minor in Business) — *August 2022 – May 2025*

Illinois Mathematics and Science Academy — Aurora, IL

High School Diploma — *August 2019 – May 2022*

Experience

Capital One — New York, NY & McLean, VA

Software Engineer Intern — New York, NY — *June 2025 – August 2025*

- Integrated a travel itinerary generation solution using data from various travel sources, including hotel and flights.
- Delivered an individualized user experience by creating a serverless data pipeline to share necessary travel context with a GenAI provider while protecting customer privacy and confidential inventory details.

Software Engineer Intern — McLean, VA — *June 2024 – August 2024*

- Unified automated and manual fraud decisioning into one platform with shared-attribute linking, reducing the average handling time by 16%, saving $5M in operational costs, and increasing investigation throughput.
- Improved application resiliency and production support via end-to-end testing, central error handling, and logging.

Caterpillar Inc. — Chicago, IL

Software Engineer Intern, Machine Learning Operations — *May 2023 – December 2023*

- Achieved an eightfold increase in supported throughput by leveraging an event-driven architecture, asynchronous I/O, multi-threaded operations, and Redis caching to enhance performance and scalability.
- Cut anomaly detection pipeline runtime by 86%, boosting service sales and improving operational efficiency.
- Reduced storage costs by 12% by developing automated tool to identify and remove obsolete prediction models.

University of Illinois — Urbana, IL

Research Assistant — *August 2025 – Present*

- Engineered a tool to automatically collect and analyze C/C++ memory errors from student environments, enabling a large dataset of student errors for pedagogical analysis and improvement of instructional material.
- Enhanced learning for students with disabilities by building and leading the deployment of a real-time captioning tool, architecting its multi-room capabilities for concurrent lectures.

CS 341 (System Programming) Course Assistant — *August 2024 – May 2025*

- Rebuilt autograder with a Jenkins-based backend, improving maintainability and enabling flexible and comprehensive test cases, while increasing infrastructure reliability.
- Built infrastructure monitoring stack and served as "on-call" contact for production incidents.

CS 357 (Numerical Methods) Course Assistant — *January 2023 – May 2025*

- Assisted students with group assignments and general understanding of numerical analysis methods.

Text Information Management and Analysis Group — Urbana, IL

Student Researcher — *September 2020 – August 2022*

- Conducted research with a high degree of autonomy at UIUC regarding active and semi-supervised learning, data sparsity, domain shift and lack of annotations to improve deep learning models for real-world scenarios.
- Worked to increase the accuracy and reduce the computational requirements of video classification tasks using self-supervised video transformer networks by designing a contrastive, multi-modal video transformer network.
- Advised by Prof. Chengxiang Zhai, UIUC and Prof. Ismini Lourentzou, Virginia Tech.

Kilpi — Naperville, IL

Co-founder — *March 2020 - May 2023*

- Create a fax-replacement platform to enable regulated businesses to accept sensitive information from clients.
- Implemented end-to-end encryption using public-key cryptography.
- Deployed application to AWS and Oracle Cloud high-availability environments for 99.99% service uptime.

Zakti Security Labs Naperville, IL

Software Engineer Intern *May 2019 – April 2023*

- Reduced non-compliant and unauthorized accesses to regulated systems by 15% through development of full-stack tools that enable businesses to identify and mitigate data security issues in real time.
- Built an end-to-end encrypted file transfer portal for regulated businesses with stringent privacy requirements.
- Developed disaster response plans that enable business continuity and recovery for high-risk organizations.
- Performed security audits for clients using the NIST and OCTAVE cybersecurity frameworks to deter cyberattacks and ensure compliance with HIPAA and SOC2 standards.

Projects

ACM @ UIUC Core *Aug. 2022 – Present*

- Built a serverless, multi-region, platform for event management, merchandise sales, member services, and more with 99.99% uptime for 5000+ users. Integrated enterprise controls including auditing and application monitoring.
- Improved cybersecurity posture by implementing fine-grained access controls and zero-trust security using Microsoft Entra ID and Cloudflare Access, along with custom internal tooling for security auditing.

Notus *May 2020*

- Built a desktop application to model the spread of COVID-19 using Monte Carlo simulations for custom room layouts and suggest improvements to increase air flow and social distancing.

Titan Robotics *Aug. 2019 – Jun. 2022*

- Architected and deployed a cross-platform scouting application for FIRST robotics competitions using React.JS, Node.JS, PyTorch, and MongoDB, with backend infrastructure on AWS Elastic Kubernetes Service.
- Led and trained a team of 7 students across full-stack development, machine learning, and data analysis workflows while maintaining comprehensive project documentation.
- Developed predictive match outcome models using PyTorch and scikit-learn on competition data, directly contributing to the team's victory at the 2020 Midwest Regional Competition through advanced team metrics and movement analysis.

Epoch @ IMSA *Aug. 2019 – Jun. 2022*

- Co-founded and led technological vision, training and managing a team of 20 students to design and deploy a production-grade CUDA-enabled HPC cluster with 600 TFLOPS of GPU-accelerated compute across 20+ nodes.
- Architected automated bare-metal cloud infrastructure using Canonical MaaS and Ansible, reducing node deployment time to under 30 minutes and implementing SLURM job management for fair resource allocation.
- Contributed to upstream open-source projects for SLURM and HPC software deployment automation, and collaborated with IMSA stakeholders on Computer Science and Machine Learning curriculum development.

Publications & Whitepapers

Singh, D. & Setty, K. (2019). *Insights Into Patient Privacy and Online Reviews* [White paper].

Accomplishments and Accolades

- Illinois State Scholar - 2022.
- Competition Finalist, FIRST Robotics Competition Midwest Regional - 2022.
- National Merit Finalist - 2021.
- US Provisional Patent Recipient, #63/130,629: External Portable Module for Secure Long-Range Communication using WiFi technology - 2020.
- Competition Champion, FIRST Robotics Competition Midwest Regional - 2020.
- Winner, Teens Take on COVID Hackathon - Best Future Impact category - 2020.
- 2nd place, Network Design Competition, Illinois Business Professionals of America - 2019.
- 3rd place, Computer Security Competition, Illinois Business Professionals of America - 2019.
- US Provisional Patent Recipient, #62/786,693: Process of Determining the Reliability and/or Accuracy of User-Produced Content - 2018.
- Recipient, Outstanding Hacker Scholarship, Hack Chicago - 2018.

Skills

AWS {Neptune, Fargate, Lambda, S3, DynamoDB, EC2, RDS}, C++, Java, Kafka, Kubernetes, GitHub, TypeScript, Node.JS, Python, React, Redis, SQL, CI/CD, Jenkins.