



# DEV SINGH

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## SUMMARY

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Sophomore at the University of Illinois at Urbana-Champaign seeking an industry or research position to build technical and professional skills. Experienced in machine learning, with research in computer vision, active/semi-supervised learning, and data sparsity. 5 years of programming experience, mainly in Python, Javascript, C++, and LaTeX. Proficient with Git/GitHub, Linux, and PyTorch. Strong software engineering background, including custom application development and deployment. Strong mathematical background, including multi-variable calculus, linear algebra, real analysis, and statistics.

## EDUCATION

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**University of Illinois – Champaign, IL**  
4.0/4.0 GPA

*August 2022 - May 2025*

- Major: B.S. in Computer Science (Grainger College of Engineering).
- Minor: Business

**Illinois Mathematics and Science Academy – Aurora, IL**  
3.95/4.0 GPA

*August 2019 - June 2022*

- Relevant coursework: Multivariable Calculus, Linear Algebra, Real Analysis, Machine Learning.
- Tutored other students in various programming languages and machine learning concepts, along with mathematics and science.
- Participated in Math team and competed in the AreteLabs national competitions, where I contributed to the team becoming one of the top 16 teams in the nation.

**Naperville Central High School – Naperville, IL**  
3.83/4.0 GPA

*August 2018 - May 2019*

## WORK AND PROJECT EXPERIENCE

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**Zakti Security Labs – Naperville, IL**  
Software Engineering Intern

*May 2019 - Present*

- Developed and deployed custom, client-focused solutions for high-risk businesses that increase work efficiency, provide cyber-security resilience, improve regulatory compliance, and facilitate secure exchange of confidential data under significant time constraints.
  - Analyzed HIPAA compliance with telemedicine and online platforms for clients.
  - Identified mitigation strategies for potential HIPAA violations.
  - Performed research into the most attacked services on corporate networks to reinforce protection of these services.
  - Created analysis tools to prevent unauthorized disclosure of confidential information.
  - Developed encrypted information sharing portal for corporations to ensure compliance with data security requirements.

**Text Information Management and  
Analysis Group – Champaign, 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 LLC – Naperville, IL**

*March 2021 - Present*

Co-Founder and CTO

- Create a SaaS fax-replacement platform that enables highly-regulated businesses to accept sensitive information over the internet.
- Implemented end-to-end encryption using public-key cryptography.
- Deployed application to AWS and Oracle high-availability environments for 99.99% uptime of all end-user applications.

#### **Epoch @ IMSA – Aurora, IL**

*August 2019 - June 2022*

Co-Founder and CTO

- Led and trained a team of 20 students to create a new CUDA-enabled HPC cluster.
- Oversee technological vision and overall reliability of the HPC cluster at both the hardware and software levels.
  - Leveraged automation technologies, including Canonical MaaS and Ansible, to enable deployment of nodes in under 30 minutes.
  - Implemented a production-grade SLURM cluster on a bare-metal cloud to provide 99.5% uptime resources to users.
  - Designed and deployed a cluster with more than 20 nodes and 600 TFLOPS of CUDA-accelerated resources.
- Contributed to various upstream open-source projects to improve the automated deployment of the SLURM job management software and other HPC software.
- Coordinated with IMSA staff, administration, Board members, and other key stakeholders.
- Worked with IMSA staff to write and improve Computer Science and Machine Learning curriculum.

#### **Titan Robotics – Aurora, IL**

*August 2019 - June 2022*

Head of Strategy and Application Development

- Created cross-platform application to facilitate scouting data collection at FIRST robotics competitions.
  - Design mobile app, backend API, and data analysis engine using React.JS, Node.JS, scikit-learn, PyTorch, and MongoDB.
  - Deployed to Amazon Web Services Elastic Kubernetes Service.
- Led and trained team of 7 students to maintain and document all projects.
- Used PyTorch and sklearn to analyze FIRST robotics competition data and predict match outcomes with other team members.
  - Deployed at the 2020 Midwest Regional Competition, directly enabling the team to win the competition through team metric calculation, movement analysis, and risk-reward analysis.

#### **Mozilla Firefox – Naperville, IL**

*May 2020 - August 2020*

Contributor

- Wrote bugfixes and features for the Firefox DevTools component, resulting in higher developer efficiency and faster development cycles for developers using Firefox.

### **PUBLICATIONS AND WHITEPAPERS**

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

### **SKILLS AND INTERESTS**

- **Concepts:** Deep Learning; Computer Vision; Semi-supervised learning; Natural Language Processing
- **Languages, Frameworks, and Platforms:** Python; C++; PyTorch; Node.JS; Canonical MaaS/JuJu; HTML/CSS/JS; Chef; Ansible; Linux; MongoDB; Latex;

## ACCOMPLISHMENTS AND ACCOLADES

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- Illinois State Scholar - 2022.
- National Merit Semifinalist - 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.