

DEV SINGH

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WORK AND PROJECT EXPERIENCE

Epoch @ IMSA – Aurora, IL

August 2019 - Present

Board Member, Co-Founder, and CTO

- Epoch is a student-led organization that fosters inquiry and research by providing a high-performance computing (HPC) cluster for Machine Learning and other computationally-intensive fields.
 - <https://epochml.org>
- As a board member & CTO, I oversee our technological vision and overall reliability of the HPC cluster at both the hardware and software levels.
 - Leveraged automation technologies, including Canonical MaaS and JuJu, to enable deployment of nodes in under 30 minutes.
 - Implemented a production-grade k8s cluster on a bare-metal cloud to provide 99.5% uptime resources to users.
 - Designed the deployment of 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.
- Worked with IMSA staff to write and improve Computer Science and Machine Learning curriculum.

Text Information Management and Analysis Group – Champaign, IL

September 2020 - Present

Student Researcher

- Research at the University of Illinois, Urbana-Champaign (UIUC) in the fields of big data, computer vision, and informatics. Work with active and semi-supervised learning with data noise and sparsity.
- Advised by Prof. ChengXiang Zhai, UIUC and Prof. Ismini Lourentzou, Virginia Tech.

Titan Robotics – Aurora, IL

August 2019 - Present

Head of Strategy and Application Development

- Create 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.
- Use 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.

Zakti Security Labs – Naperville, IL

May 2019 - Present

Software Engineering Intern

- Aid in providing cyber security and regulation compliance related services and information to high-risk firms.
 - 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
- Deployed client-focused solutions to increase work efficiency and security.
 - Created secure transport website for clients to submit confidential information, which was deployed to AWS Elastic Beanstalk.

Thoxyn – Naperville, IL

March 2017 - August 2019

Co-Founder and DevOps Engineer

- Strengthened system reliability and developer operations by proactively managing and optimizing cloud architecture.
 - Ensured 99.99% uptime of all end-user applications.
 - Built and maintained Docker container clusters using k8s on AWS to ensure a consistently responsive client experience.
- Wrote code and supported architecture in high-throughput systems on AWS and Azure clouds.

PUBLICATIONS AND WHITEPAPERS

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

EDUCATION

Illinois Mathematics and Science Academy – Aurora, IL

August 2019 - Present

3.83/4.0 GPA

- 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

August 2018 - May 2019

3.83/4.0 GPA

SKILLS AND INTERESTS

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

ACCOMPLISHMENTS AND ACCOLADES

- US Patent Recipient, #62/786,693, Process of Determining the Reliability and/or Accuracy of User-Produced Content 2018.
- US Patent Recipient, #63/130,629, 2020.
- Competition Champion, FIRST Robotics Competition Midwest Regional 2020.
- Recipient, Outstanding Hacker Scholarship, Hack Chicago 2018.
- 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.