

# DEVANSH BATRA

[github.com/devanshbatra04](https://github.com/devanshbatra04) [devanshbatra.com](https://devanshbatra.com) [devanshb.it.17@nsit.net.in](mailto:devanshb.it.17@nsit.net.in)

📍 2065, Sector 6, Bahadurgarh, Haryana, India 📞 +91-8930485111

## EDUCATION

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**Netaji Subhas Institute of Technology, New Delhi**  
*Bachelor in Engineering, Information Technology*

*Aug 2017 - May 2021*  
*GPA – 8.57 (4 Semesters)*

## TECHNICAL SKILLS

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**Programming Languages:** C++, Python, Javascript, Haskell, C, CSS, Ruby, SQL  
**Relevant Frameworks:** **Web:** ReactJS, NodeJS, Flask, Django, Ruby on Rails, SQLAlchemy  
**Databases:** MongoDB, MySQL, PostgreSQL, Elasticsearch  
**Deep Learning:** Tensorflow, Keras, Pytorch  
**Misc.:** Spacy, NLTK, Robot Operating System, Gazebo, QT Framework

## WORK EXPERIENCE

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**Google Summer of Code, OpenCV** *Jun 2020 - Present*  
- Working as a student developer for OpenCV organisation under Google Summer of Code.  
- Created the Point Cloud (PtCloud) module in OpenCV allowing basic Point Cloud manipulation within OpenCV.  
- Implementing sample consensus based object fitting and segmentation methods using RANSAC and LMeDS.

**Summer Research Intern, Sprinklr** *Jun 2020 - Present*  
- Deployed distributed, scalable and extensible microservice based architecture for monitoring of servers.  
- Added config-driven Slack Integration to quickly add new param based devops services with realtime reports.  
- Overall, the new framework heavily simplifies ITOps workflows for finding faults across servers and reporting them.

**Research Intern, Complex Systems Lab, IIT Delhi** *May 2019 - July 2019*  
- Summer research intern at Complex Systems Lab under the mentorship of Dr. Ganesh Bagler at IIT-D.  
- Projects drove original efforts in the field of Computational Gastronomy pioneered by Dr. Ganesh Bagler.  
- Created RecipeDB - the single largest peer reviewed repertoire of 148k cooking recipes with nutritional content.  
- Integrated RecipeDB with FlavorDB and DeitRx, thus adding flavor molecules and disease associations.  
- Developed SOTA language models for novel recipe generation, beating the SOTA by 33% in terms of perplexity.

**Javascript And Machine Learning Intern, Taiyo** *July 2018 - June 2020*  
- Created modular visualization libraries, along with UX design of visualisation client for economic and finance data.  
- Integrated with Grafana widgets for analysis from several machine learning models developed.  
- Created a pipeline for efficient handling of terabytes of data across websockets, with efficient database management.  
- Statistical Machine Learning models for prediction of cryptocurrency rates and for consumer sentiments.

**Teaching Assistant, Coding Blocks** *June 2018 - July 2018*  
*Full Stack Web Development*  
- Took doubt sessions, debug codes and graded assignments and projects.

**Software And AI Department Lead, ARES Robotics** *July 2018 - Present*  
- Incorporated Visual Inertial Odometry, fused GPS localization, and Path Planning in the ATOM Mars Rover.  
- One of top 30 teams worldwide in European Rover Challenge 2018 and 2019.

## PROJECTS

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**Traffic - CCTV Stream Based Traffic Management**  
**Tech Stack:** Tensorflow, PyQT, NodeJS, Elasticsearch, Raspberry Pi with heavy dependence on GCP compute engine  
- A real time SSD based computer vision approach was used to detect vehicles at traffic light junctions.  
- Individual vehicles were identified using license plate detection and preprocessing using OpenCV followed by OCR.  
- Implemented utilities of this data include traffic light management with real time traffic density and theft recovery.

- Further optimization included migrating to Haar Cascade based density evaluation method on a Raspberry Pi.
- **Won first prize** at HackCBS (Delhi University's first hackathon) **among 500 participating teams**.

### **Sentinel - Remote Connection And Rootkit Scanner**

**Tech Stack:** QT Framework, Python, Shell, Several Python Libraries

- Cross platform application for detecting and eliminate multiple rootkits from Windows and UNIX systems.
- Incorporated intuitive GUI features as well as outsourced databases for the purpose of identifying IP addresses.
- Included system binary signatures for 79 UNIX rootkits
- Included utility functions to deal with TCP remote connections like offline location scanning, manipulating iptables
- Real-time checking of processes for malware using multithreaded hashing of suspicious files for VirusTotal matches
- **Won complex problem statement category** at Smart India Hackathon under Ministry of External Affairs.
- Software acquired and used by Ministry of External Affairs across their data center.

### **Atom - Mars Rover Prototype**

**Tech Stack:** ROS, Gazebo, Bumblebee, Jetson Nano, Arduino

- Wrote scripts in ROS for Science Cache task to autonomously control the 5 Degree of Freedom Robotic Arm.
- Implemented ORB Slam, GPS assisted Localization and Obstacle avoidance.
- The autonomous systems received particularly high score with jury commendation at University Rover Championship
- Ranked among the 30 top teams at European Rover Championship 2019, to represent India at the same.

### **RecipeDB - A resource for exploring recipes, their culinary, nutritional, flavor and health correlates**

**Tech Stack:** Spacy, Tensorflow, Flask, SQL

- Data curation and analysis of recipes, flavor molecules and disease associations.
- Used NLP Techniques to extract and find relationships between various characteristics of recipe ingredients.
- Developed models to infer nutritional information about, taking into account ingredients as well as cooking processes.
- Developed a method to find similarity between recipes based on the above exercises
- Developed the whole database and webapp from the same from scratch.
- **Batra, Devansh**, et al. "RecipeDB: A Resource for Exploring Recipes." Available at SSRN 3482237 (2019).

## **ACHIEVEMENTS**

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- June 2017 - 99.5th percentile in JEE, with AIR 6575
- June 2018 - ARES Rover Qualified ERC 2018
- 2018 - 2019 - Won Multiple Hackathons, including Smart India Hackathon and MS Hacks (at Microsoft Gurgaon)
- Mar 2019 - Perfect Science Score in URC 2019
- May 2019 - Secure And Private AI Scholarship
- May 2019 - ARES Mars Rover Qualified for European Rover Championship at Kielce, Poland
- Jan 2020 - ARES Mars Rover finished 13th/65th at Indian Rover Challenge among several international teams

## **EXTRA-CIRRICULAR**

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Organised TeamC research conference at NSIT 2017

Organised inter-collegiate hackathon - Hackeam 2017.

Managing Editor at The Alliance - NSUT's Newspaper

Organised the finance and debating fests of NSIT

Head of Technology at Innovision 2019 - The official technical fest of NSIT