

# Shaurya Dewan

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## EDUCATION

### International Institute of Information Technology Hyderabad

Hyderabad, India

*BTech. in Computer Science and Engineering (Honors in Robotics Research Center); GPA: 9.05 July 2019 - Present*

*Courses: Linear Algebra, Probability and Statistics, Machine Data and Learning, Computer Vision,*

*Computational Social Science, Design and Analysis of Software Systems*

### Indian School Muscat (CBSE)

Muscat, Oman

*Senior School Certificate Examination (Class XII); 12th CBSE Boards Percentage: 94.4%*

*2007 - 2019*

### External Courses

Remote

*Machine Learning by Andrew Ng (Coursera) (2020); 6th Summer School on AI by CVIT @ IIIT-H (2022)*

## TECHNICAL SKILLS

**Languages:** Python, C, C++, MATLAB, Octave, Bash, x86

**Web Technologies:** HTML5, CSS, Javascript, Handlebars, React, GraphQL, Flask

**Databases:** MongoDB, SQL

**Important Libraries:** PyTorch, PyTorch-Lightning, TensorFlow, OpenCV, Open3D

**Tools:** Blender, Docker, Anaconda, Jupyter, Git, Postman, Latex, Markdown, Vim, VS Code

## EXPERIENCE

### Robotics Research Center @ IIIT-H

Hyderabad, India

*Undergraduate Honors Researcher - Prof. Madhava Krishna*

*May 2021 - Present*

- **Canonicalization of Radiance Fields:** Submitted a paper that is currently under review at CVPR 2023 in collaboration with Prof. Srinath Sridhar from Brown University on canonicalizing NeRF generated fields for single-object scenes using a modified version of ConDor in pytorch-lightning. Also released a dataset of nearly 1500 trained NeRF models across 13 categories including a few real-world scenes per category.
- **Pose-Shape Optimizer Pipeline:** Built an end-to-end pipeline in MATLAB and ceres that reconstructs and localizes a vehicle in 3D given a monocular 2D image using shape priors. I also applied a multi-view optimization over the shape to stabilize it across sequences of consecutive frames from videos. Applied concepts such as deep learning (used the stacked hourglass network for keypoint detection), PCA, single-view geometry, etc.
- **Summer School 2022:** Conducted a few classes for the incoming batch of research students during the lab's 2022 summer school.

### Precog Research Group @ IIIT-H

Hyderabad, India

*Undergraduate Independent Study Researcher - Prof. Ponnuram Kumaraguru*

*Jan 2022 - Present*

- **Infosys Synthetic Data Generation:** Assembled a relationship-preserving multi-table synthetic data generation system in python which has since been integrated into the Infosys Enterprise Data Privacy Suite (iEDPS). Submitted a paper to an A-level conference.
- **Infosys Data Discovery and Disposal:** Currently working in collaboration with Infosys on automated data discovery and disposal in a heterogeneous data environment with data spread out across different structured formats. We have completed a privacy-preserving, scalable and efficient implementation of the data discovery pipeline in python.
- **Factly SACH Fact Check Search Engine:** Currently working in collaboration with Factly on analyzing and improving the reverse image search pipeline within their fact check search engine. Using concepts such as deep learning, object detection (EfficientNet), face detection (FaceNet), OCR, image hashing, etc.

### Virtual Labs

Remote

*Software Engineer Intern*

*May 2021 - July 2021*

- Designed a common experiment template in HTML, CSS and JavaScript for reuse by other developers and used it to build 10 experiments of the [Soil Mechanics Lab](#) which went on to become the second-most viewed lab of all IIIT-H labs for the past year.
- Performed detailed research and documentation on search engines and SEO to improve organic traffic and provided suggestions for improvements and tools.
- Developed a tool from scratch using JavaScript and Handlebars to help experiment developers fix major bottlenecks in performance and other SEO aspects using Google's lighthouse API and mobile-friendliness API.

- Modified the experiment build script to add plugin processing capability.
- In addition to the internship, as part of a course project (DASS), I led a four-member team to build all 10 experiments of the [Structural Dynamics Lab](#) of which I built 4.

## International Institute of Information Technology Hyderabad

Teaching Assistant

Hyderabad, India

Monsoon 2022 & Monsoon 2021

- **Mobile Robotics (Aug - Present):** One of three teaching assistants overseeing the Mobile Robotics course with a strength of 33 students. Conducted a couple of lectures and tutorials in person during the course.
- **Automata Theory (Oct 2021 - Dec 2021):** One of eight teaching assistants overseeing the Automata Theory course with a strength of 212 students. Conducted a couple of online tutorials during the course.
- **Other Responsibilities:** Other responsibilities included setting papers, grading papers, conducting evaluations, addressing student doubts and issues, updating the course website with the required documents, etc for both courses.

## Entrepreneurship Cell @ IIIT-H

Finance Team Head

Hyderabad, India

Jan 2020 - July 2022

- **Finance Team Head (June 2021 - July 2022):** Mentored and led the finance team to handle all financial matters, handled miscommunications and issues, drafted and kept track of the annual budget of upto 8 lakh rupees, took financial decisions during events, etc. Also handled the finances for Megathon, one of the largest hackathons in India.
- **Finance Team Member (Jan 2020 - May 2021):** Handled the team and event bills, communicated with sponsors for money transfers, communicated with the college accounts office to process payments, etc.
- **Other Responsibilities:** The team was highly flexible and all members would be part of at least one event's core team during the semester. I was part of the organizing team for our "Footbids" event during the college's annual fest, "Felicity", for two consecutive years. I was also a project mentor for one of the teams participating in the SummerUp 2022 event.

## PROJECTS

- **Mobile Robotics & Computer Vision:** Implemented various algorithms and methods commonly used in computer and robotic vision applications. The algorithms implemented include ICP, DLT, epipolar geometry, stereo vision, bundle adjustment, PnP, SLAM, optical flow, graph-cut segmentation, etc. Used Jupyter and python.
- **Scrabble Assistant:** Made a system from scratch that extracted the Scrabble board as a matrix from an image as well as the tiles/letters using OCR and suggested the best word for the user's given 7 tiles and the given board. Jupyter and python were used for the main backend logic while nodejs was used for the GUI.
- **Intracranial Hemorrhage Segmentation:** Was the architect of a basic pipeline in python based on UNet to segment out intracranial hemorrhages from NCCT Scans as part of the INSTANCE 2022 challenge.
- **Peersity:** A social media platform for IIIT-H students where they can post blogs, clarify doubts and connect with others. Also promoted learning by giving ratings based on doubts asked and answers posted. Worked on the friend recommendation system and helped build other back-end and UI using HTML, CSS, nodejs, React, GraphQL, and MongoDB.
- **Wikipedia Search Engine:** Designed and developed a search engine that performed real-time querying on a 20GB index built from a 80GB Wikipedia dump. Used python.
- **Database Management System (Ongoing):** Currently working on a project for the "Data Systems" course to build a basic relational database management system from scratch in C++.
- **Wonkru:** One of the founders of "Wonkru" - a C2C e-commerce web app built using the MERN tech stack. Built the entire back-end from scratch and worked on back-end and front-end integration and hosting. Won "Best Idea" in "SummerUp" held by E-Cell.
- **C Shell:** Built a UNIX like shell from scratch in C. Implemented various functionality such as piping, redirection, flags, etc.

## ACHIEVEMENTS

- Part of the merit list of the top 20% of the batch for 3 out of 6 semesters of B.Tech so far
- GRE (2022) score of 333/340, AWA score of 4/6
- TOEFL (2022) score of 113/120
- School Computer Science subject topper in 12th CBSE Boards with a score of 99/100
- SAT I (2017) score of 1510/1600
- SAT II (2018) score of 2400/2400
- Awarded Merit Award for securing 90%+ for 6 out of 8 academic years starting from 5th grade
- Ranked 3rd out of about 240 students in the Science stream classes in 11th grade
- Captain of MCCC club cricket team for the Under-16 OCC cricket tournament