Abhinav Azad | Final-year master's student

DOB: 15.11.1999 | Email: abhia@smail.iitm.ac.in
Mob: +91-8504894849 | Website: abhiazadz.github.io/abhi-web

I am a highly motivated multipotentialite passionate in art, science, and technology. I wish to become a researcher developer and contribute to the human-centred advancements for sustainability.

Education:

Feb 2020-Feb 2021 — **Semester Exchange Program (6th &7th Sem) - Czech Technical University in Prague**

I was selected for semester exchange program from IIT Madras for pursuing specialization courses in Biomedical Engineering at CVUT in Prague which is one of the largest universities in the Czech Republic and the oldest Institute of technology in Central Europe.

Jun 2017-May 2022* — **Bachelor's & Master's in Engineering Design - Indian Institute of Technology Madras**

This course offered me an interdisciplinary curriculum of Electrical and Mechanical sciences with the essence of **Design Thinking** specializing in **Biomedical Engineering**. CGPA: 7.81/10

IIT Madras is rated the best educational institute in India for 5th time in a row by National Institutional Ranking Framework (Source). IITs have an acceptance rate of less than 0.5%.

Professional Experiences:

June 2021-Present — **IITM Dual Degree Project** | Under Prof. Nirav Patel

- OBJECTIVE: Implementation and optimization of Kuka IIWA for minimum invasive neurosurgery
- METHOD: Characterization of Kuka IIWA and RL techniques to minimize deformational errors

Feb 2020-Present — **Data Analyst internship in Cerner Intelligence Group - Cerner Healthcare**

- OBJECTIVE: **Chest X-rays image analysis identifying abnormalities for COVID identification**
- METHOD: Improvision in model learning with **limit dataset using DL** and **image processing, unbalanced data handling**, feature visualization for **AI explainability** using **GradCam**

OUTCOME: 98.3% precision in **Lungs Segmentation** on **UNET** and achieved covid detection on CXRs with **cross-Val** accuracy over **95%**, work to be published in international conferences

July-Oct 2020 — **Research Internship in Robot & Machine Perception Group - CIIRC, CVUT Prague**

- OBJECTIVE: **Real-time** detection of **miniature parts** in **Human-Robot interaction** assembly line on **Nvidia Jetson Nano** microcontroller and **Intel Realsense dept camera 435i**. [Project link]
- METHOD: Built on **ROS** and optimization by feeding select parts of **Live HD stream** to the **CNN** by **additional Image processing** to detect new objects in the workspace. **Guide:** Radoslav Škoviera
- OUTCOME: Live detection of tiny parts with Full HD imaging on Jetson Nano was possible 61x faster and currently drafting our paper to publish the research in international journals.

May-July 2019 — **Summer Internship at Nagaoka University of Technology, Japan** | **Guide:** Prof. Okazaki M

I was among the top 3 students from India qualified for NUT Summer Industrial Research Internship.

- OBJECTIVE: **Fastening solution** for **Thermoset Plastics** for robust and repeatable usage.
- METHOD: Designing experiments for testing the screw's resulting torques using **'Qualimate Torque Analyzer'** under varied load and materials to **re-parameterize** the screws. [Project Thesis link]
- OUTCOME: Developed **Saima tapping screws, "Special Nonserts"** for SAIMA Corporation, Japan.

Nov-Dec 2018 | **Hand-held grain detector and analyzer at infyU LABS, - IIT Gandhinagar**

- OBJECTIVE: Develop a device to **identify rice types** and techniques to **segment, separate & use touching rice grains** samples to increase sampling efficiency, over **Raspberry Pi & Python.**
- METHOD: **Computer vision** to detect overlapping grains using **convexity criteria** on the rice grain contours and separated the contours to increase samples for learning and averaging.
- OUTCOME: Developed a **Hand-held multi grain analyzer** and currently working over the **Patent.**

Awards and Achievements:

2021 | **Ram Shriram Merit -** Secured scholarship among 14 students based on yearly performance

Dec 2018 | **Inter IIT Gold Medalist: 7th Inter IIT Tech Meet - IIT Bombay**

- Winner among all the 16 IITs across India in **'BETiC[3] Medical Innovation Challenge'**. [Project link]
- **"Ergonomic Crutch"** for **assisting physically disabled**, tackling problems in existing crutches. Analyzed **gait patterns** & developed modern **crutch** suitable in workspace for Indian patients.

2015 | **International Math Olympiad -** Secured 86th rank Internationally in 8th IMO by SOF

August 2015 | **Winner at 'JIGNYASA Science Fair 2015 - Hubli, Karnataka**

Developed **"Inexpensive soil testing kit"** for investigation and organic treatment of various soil type.

Feb 2013 | **National Bal Shree Honor 2013 - National Bal Bhawan, New Delhi**

- Received **India's most prestigious honor for youngsters** in the field of **'Scientific Innovations'.**
- Qualified State, Zonal and National level innovation challenges involving problem solving.

Position of Responsibilities:

Aug 2018 - July 2019 | **Legislator of Narmada Hostel, Student Legislative Council**

- I was elected as the **legislative representative** among the **380+ students** of Narmada hostel, IITM.
- **Policies formulations** and involvement in **Student Governance** affecting nearly **10K students.**

2015-17 | **Strategist, Physics & Astronomy Club of IIT Madras**

- As part of the **oldest clubs of IITM**, conducting various events, seminars, and observation sessions
- Facilitating & guiding students to purse projects in physics and astronomy as a part of **CFI[4]**

Relevant Coursework and Skills:

•Computer Vision	•Medical Image Analysis	•Geometrical Modeling	•Biomechanics & Human Physiology
• ML/DL •IoT	•Digital Signal Processing	• Mechatronics	• Control systems •Probability
•Forms & Aesthetics	•Creative Design	•Design of Medical Devices	•Introductory Neuroscience*

My hobbies and Extracurricular Activities:

Fine-Arts

- I earned the recognition of Institute's **"Best Artist Award-2018"** in IIT Madras.
- I have proficiency in various mediums: Oil painting, Watercolor, Acrylics, Sculpting, Paper Mache.

Sports

- We Stood 3rd in Inter-Hostel Men's **Water Polo** among the Sixteen Hostels in IIT Madras.
- I have been practicing Weightlifting, running Marathon, Swimming, Tennis, and Badminton.

Astronomy

- Participated in a week-long professional **Astrophotography workshop** at Kausani, Himalayas.
- I headed the Kilkari Science & Astronomy Club in Patna and conducted various star-grazing sessions.

(1) HTIC: Healthcare Technology Innovation Centre (3) BETiC: Biomedical Engineering Technology & Incubation Centre, IIT Bombay
(2) CIIRC- Czech Institute of Informatics and Robotics (4) CFI: Centre of Innovation, IIT Madras **BLUE TEXT is Hyperlinked** *On-going Courses