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Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	Andhra Pradesh Board of Education	FIITJEE Junior College	2020	93.30%
Matriculation	Central Board of Secondary Education	Kendriya Vidyalaya No.1 SVN	2018	95.40%

Pursuing a minor in **Data Science** offered by **C-MInDS**, IIT Bombay

## SCHOLASTIC ACHIEVEMENTS

- Achieved All India Rank **882** in JEE- Advanced Examination out of **0.15 million** candidates (2020)
- Achieved All India Rank **3743** in JEE- Main Examination out of **1.2 million** candidates (2020)

## PROFESSIONAL EXPERIENCE

### IIT Bombay Racing Team

A team of 70+ students from various departments working on the design and fabrication of electric race cars. First Indian team to win the design event in the 22-year history of the Formula Student event held annually at Silverstone, UK

**Design Engineer - Vehicle Dynamics and Electronic Differential** (June '22 - Present)

- Improving the existing **Vehicle Dynamics** model of the car and employing it to make crucial design decisions
- Developing the **transient** VD models using **Carmaker** with Simulink to achieve faster computation speeds
- Implementing traction control algorithm to reduce wheel spin which was observed while testing the car.

**Junior Design Engineer - Vehicle Dynamics and Electronic Differential** (Sep '21 - May '22)

- Represented IIT Bombay Racing at **Formula Student (FS) 2022**, held at Silverstone, UK and interacted with many top teams to gain insights about their design, manufacturing and engineering practices
- Part of 15 member contingent involved in **electro-mechanical assembly** & testing of the car in **UK** for **FSUK'22**.
- Documented** the entire project in UK containing various technical issues and future design improvements
- Participated in FS 2022 **Lap Time Simulation** Event organized by the Institute of Mechanical Engineers.
- Optimized laptime of the **Formula Student** prototype car in IPG Carmaker by tuning **suspension, drivetrain and aerodynamic** parameters within permissible limits for given track layouts
- Improved the **lap time** of the car in the FS 2021 LTS event by **12 seconds** for the given autocross track
- Implemented **Torque vectoring algorithm** on a Formula Student test car in **IPG CarMaker** to reduce **understeer**
- Incorporated **PID control** in the Torque vectoring algorithm which aims to make the slip angle difference between front and rear equal to zero. Tuned the **PID** to improve laptime by **0.5 second** on Skidpad track in CarMaker
- Parameterised** the **E-12** car in CarMaker to perform robust testing and analysis of the car

**Jaguar Land Rover Powered Bonnet** | Inter IIT Tech Meet 10.0 (Mar '22)

- Collaborated with 4 other members to **ideate and develop** a solution to the given problem specifications. Bagged **Silver Medal** among **23 participating IITs** by working in the stipulated time frame of 10 days
- Designed a **simple, cost efficient and industrially scalable** solution after exploring various other solutions
- Designed the entire **CAD** of the bonnet & actuators in **SolidWorks** using 77% less space than expected
- Assisted in developing the modified **PID** controller in **MATLAB** & modeling in **Simulink** to the given requirements

## TECHNICAL PROJECTS

**Variation of stress concentration factor with fillet radii** | Course Project (Feb'22-Apr'22)

- Worked in a team of 4 to **devise, ideate and implement** an experiment in the field of **Solid Mechanics**
- Processed **Aluminium 6063** sheet to make samples with rectangular holes of different fillet radii which were subjected to axial load in a **UTM** and were observed using **Digital Image Correlation (DIC)** technique.
- Processed the **DIC** results in **NCorr** and **GOM correlate software** to find stress concentration factors (SCF)
- Observed a **steady decrease** in SCF with increasing fillet radii which is **consistent** with literature

## Comparing different Text Classification ML Models | DS303 Course Project (Apr'22)

*Classifying news articles into categories using different text vectorization techniques and classification algorithms*

- **Pre - Processed** the data by removing **links, numbers, characters, emojis** and **noisy words** from the text
- Applied various techniques to convert text to vector like **BoW, BoN, TF-IDF, Word2Vec(CBoW & SkipGram)**
- Used different classification algorithms like **Naive Bayes, Logistic Regression** and **Random Forest Classifier**
- **Naive Bayes Classifier** with **Bag of words (BoW)** achieved a performance accuracy of **97.7%**

## EYRC- Functional Weeder | E-Yantra, IIT Bombay (Sep '21 - Mar '22)

- Created an algorithm for multiple robots to explore an unknown arena with capabilities of autonomous navigation, obstacle avoidance, shortest time, multiple destinations using **Elixir, Functional Programming Language**
- Used **Breadth First Search** algorithm to find the shortest path to the goal and **navigating obstacles** in its path
- Used **Elixir processes** to communicate between 2 robots for co-ordination between reaching goal positions
- Used **Phoenix Web framework** and **Live view** to depict the robot's actions on a web interface
- Designed a **gripper** that was mounted on the robot for sowing seed objects & weeding plant stalks

## Cozmo Clench Robot | Techfest, IIT Bombay (Oct '21 - Dec '21)

*A Competition in which a remotely controlled robot has to complete tasks while navigating an obstacle course*

- Completed the entire course in **82 secs**, picking up and placing all the object perfectly in given locations
- The robot has the capability to lift up to **half a KG** and can cross obstacles with height of **3.5cms**
- Designed the entire robot and gripper in an iterative process consisting of testing, redesigning and testing again

## Autonomous Ball Catching Robot | Institute Technical Summer Project (Feb '21 - July '21)

*A robot that can autonomously catch a ball, using a camera, thrown from any direction into the robot's orientation*

- Used **OpenCV** as the image processing tool to track the ball location in 3D space and calculate its velocity
- **Predicted** the ball's final location using its current location and velocity iteratively to increase accuracy
- Simulated the project using **ROS & Gazebo** with custom made **ROS-plugin** to simulate throwing of the ball

## POSITIONS OF RESPONSIBILITY

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### Core-team member - Electronics and Robotics Club, IIT Bombay (June '21 - Apr '22)

- Part of 15-member core team catering to **5000+** electronics and robotics enthusiasts in the institute
- Revamped the official website of ERC with a new blog page, navigation bar and integration with **forestry.io**
- Successfully conducted **XLR8, Line follower workshop, Controls Bootcamp, ROS winter workshop** and an offline event, **Fun Theory Session** for **200+** tech enthusiasts in the institute.

### Team member - All IIT Robotics Association (AIITRA) (June '21-Jan '22)

- Representing IIT Bombay in AIITRA, a collaboration between robotics club of **top 6 IITs** to conduct country-wide hackathons sponsored by renowned corporations like Peppermint
- Part of logistics & web-development team for **AIITRA Robotics Challenge 2021**, a nationwide competition
- Contacted **15+** institutes to publicize the event and were successful in increasing the reach to over **30,000+**

## TECHNICAL SKILLS

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<b>Software Tools</b>	SolidWorks, CarMaker, IPG Kinematics, MATLAB, Simulink, Ansys, ROS, Gazebo
<b>Programming Languages</b>	C++, Python, OpenCV Library, Elixir, HTML, CSS, JavaScript
<b>Operating Systems</b>	Windows, Linux

## COURSES UNDERTAKEN

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- Mechanical Engineering :- Fluid Mechanics, Thermodynamics, Solid Mechanics, Structural Materials, Mechanical Measurements, Manufacturing Processes, Heat Transfer\*, Microprocessor and Automatic Control\*
  - Others :- Introduction to Machine learning, Computer Networks, Introduction to Electrical and Electronics Circuits, Introduction to Numerical Analysis, Economics
- \*to be completed by Nov'22

## EXTRACURRICULARS

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- Secured **3rd position** in Jhatka GC, a competition comprising questions on electronics and robotics (Mar '22)
- Secured **1st** in Training GC as a team of four as part of **National Cadet Corps, IIT Bombay** (May '21)
- Presented a business model in EnB Buzz Competition as part of 3-member team, organized by E-cell, IIT Bombay (Dec '20)