Kunal Chhabra
Electrical Engineering
Indian Institute of Technology Bombay

19D070031
UG Second Year
Male
DOB: 29/12/2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	8.37
Intermediate/+2	CBSE	DAV Centenary Public School,Barara,Ambala,Haryana	2019	94.20
Matriculation	CBSE	Swami Vivekananda Public School,Sec-17,HUDA,Jagadhri,Haryana	2017	10.00

Scholastic Achievements

- Secured an **All India Rank 110** (among **1.2 Million** candidates) in **JEE Mains 2019**.
- Secured an **All India Rank 514** (among **0.2 Million** candidates) in **JEE Advanced 2019**.

Projects

Junior Design Engineer,Team Rakshak *Aug 2020-Present*
Student Initiative to develop a fleet of cost effective UAVs
Controls and Communication Subsystem *IIT Bombay*

- Hands-On Experience on the **ROS Architecture** for controlling a robot and developed **python** codes for node to node communication.
- Working on **MAVROS** to navigate between ground station and **Pixhawk**,the flight controller.
- Developing Algorithm for stationary and moving **obstacle avoidance** in real time and its python simulation for participation in **AUVSI SUAS** Competition.
- Extracting **Mission Data** by setting up **communication** with inter-operability Server.

Video in-betweening using direct 3d convolutions *Autumn 2020-21*
Course Project | Guide: Prof. Biplab Banerjee *IIT Bombay*

- Implemented the video generation tasks from images using both **CVAE** and **CGAN** method
- Used **Moments in Time** dataset- **1M** videos split into **339** categories using **Google Cloud**.
- Output videos of both interpolation and CVAE **closely resembled** the original videos,with pixels downscaled to reduce computational time

Image to Recipe/Nutritional Information Generator *Autumn 2020-21*
Self Project *IIT Bombay*

- Designed **Deep Learning Model** to generate recipe/Nutritional information of food item.
- Used **ResNet-50,ResNet-101** and **DenseNet-121** Convolutional Neural Networks(**CNNs**) on subset of **Recipe1M+** dataset which includes **400,000+** recipes using **Google Cloud**.
- Added **nutritional labels** to Output Recipes for users to make choice for **nutritional goals**.

Self Irrigation System *Summer 2020*
Tinkering Bootcamp | Learners Space | Tinkering Laboratory | IIT Bombay

- Designed a code of Self irrigation system in **Arduino** IDE which would automatically sprinkle water if humidity is very low or temperature is very high in the surroundings.
- Used **DHT11 Sensor**-Reading of Temparature was displayed on **BLYNK App** using code.
- Learnt about **ESP32 as MCU** with on-board WiFi and **Hall Effect Sensor.**
- Hands On Experience on **Pyautogui** and **Selenium** for **Web Automation**.

Bluetooth Controlled Bot *Autumn 2019-20*
Flagship Event | Electronics & Robotics Club | IIT Bombay

- Devised a Remote-Controlled robot using Bluetooth Module(**HC05**) And Motor Driver(**L293D**) which can communicate with the micro-controller **ATtiny85** to give commands to Motor Driver.
- Designed chassis for it and applied **Differential Steering Mechanism** for its proper controls.
- Spearheaded Mechanical And Electrical Subsystems to overcome diverse obstacles along track.

DC Power Supply *Autumn 2019-20*
Course Project | Guide: Prof. BG Fernandes *IIT Bombay*

- Used transformer and **full wave bridge rectifier** with **capacitive filter** to get rectified wave.
- Kept **Zener diode** in reverse bias to get +5V and -5V DC supply from **rectified** wave output.
- Used **IC 7805** and **IC 7905** to get +12V and -12V DC Output Supply from rectified wave.
- **Soldered** the full wave bridge rectifier,Zener and IC Setups on **PCB** for use in future labs.

Multi-Functional ALU *Autumn 2020-21*
Course Project | Guide: Prof Virendra Singh *IIT Bombay*

- Designed a signed 16-bit **Arithmetic & Logical Unit(ALU)** with user control inputs.
- Efficiently implemented **Structural VHDL** in **Quartus Prime** using a **3-tier** structure ALU
- Understood working of **Fast Adders**,executed **Kogge Stone**&**Brent Kung** adders in VHDL

Positions of Responsibility

Activity Associate, Web *July 2020 - Present*
National Service Scheme (NSS) *IIT Bombay*
Part of the 3-membered team responsible for promoting NSS activities and developments of NSS

- Updated **Team Lists** for the year **2020-21** and minor front-end work on the **Official NSS Webpage** using CSS And JavaScript.
- Contributed in front end work of **5** webpages of Official NSS Website.

Coordinator, Horizons *May 2020 - Dec'20*
50th Edition | Mood Indigo *IIT Bombay*
Asia's Largest College Cultural Festival | 1,46,000+ footfall | 240+ events

- Conceptualised,executed and hosted the first ever **MIPL** Auction with **500+** Participants.
- Inviting **20+ artists** from **4 countries** to exhibit performances at the 50th Mood Indigo.
- Ideating,structuring and spearheading a team of **15+ organizers** to execute events in the **flagship event Vogue,Horizons**- The Official **Fashion Competition** Of 50th Mood-Indigo
- Contacted **Fashion Houses**,judges and converted leads to **LYP Partners** for Vogue,MI.

Technical Skills

Programming	C/C++, Python, Java, Julia, Bash
Web Development	HTML, CSS, PHP, JavaScript, Bootstrap,jQuery
Software	MATLAB, GNU Octave, Git, LaTeX, AutoCAD, SolidWorks, Photoshop, Illustrator, After Effects

Extra-Curriculars

- Successfully completed an year course under the **National Service Scheme** (NSS) IIT Bombay involving ideation and implementation of solutions to social problems. *(2017-18)*
- **Semi-Finalist** in the **Official Classmate Spell-Bee Competition 2015** Powered by The Times Of India Newspaper with **2,00,000+** participants. *(2014-15)*
- **Led** a **5 membered team** in **ERATOSTHENES Project,2016** organized by **IAU** world-wide to measure circumference of Earth. *(2016-17)*
- Participated in **EnB Buzz 2019**,by **EnB Cell,IITB** to develop market strategies and creating **Revenue Model** using Case Studies *(Autumn 2019-20)*