Kartikeya Chandra
Electrical Engineering
Indian Institute of Technology, Bombay

19D070029
Dual Degree (B.Tech. + M.Tech.)
Gender: Male
DOB: 06-12-2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	CBSE	Kendriya Vidyalaya Dimapur	2019	95.40%
Matriculation	CBSE	Kendriya Vidyalaya Dimapur	2017	10

Pursuing **Minor** degree in **Aerospace Engineering** at IIT Bombay

Scholastic Achievement

- Awarded **Certificate of Merit** by Kendriya Vidyalaya Sangathan for being in top **1.5percentage** amongst 0.68 lakhs students in **AISSCE** *2019*
- Recipient of prestigious **National Talent Search Examination** (NTSE) Scholarship by NCERT *2017*
- Qualified Regional Mathematics Olympiad with **a rank of 6** from Kendriya Vidyalaya Sangathan Region and was among the **top 500** students from the country *2018*
- Secured **third position** in **Vidyarthi Vigyaan Manthan** conducted by **NCERT and Vigyan Prasar** in **North East** Region *2016*
- Awarded **INSPIRE** for outstanding achievement in academics *2014*

Key Projects

RISC Microprocessor | *Self Project* *(May '21 - July '21)*

- Implemented a **5-stage Pipelined** RISC Microprocessor using **Quartus Prime** Lite on **VHDL**
- Emulated the **RiSC-16 ISa** by Prof. Bruce Jacob, based on the **LC-896** developed by Prof. Peter Chen.
- Designed the **MIPS-like** Processor with **8 registers, 512 byte data memory and 16-bit instructions.**
- Executed the 5-stage pipeline to prevent **Interlocking Stages** and Branch Hazards

Fraudulent Transaction Detector | *Technical Summer Project* *(May '21 - July '21)*

- Applied **PCA model** on European Credit-Card Transaction Data,2013 to generate 28 variables to train upon
- Employed various standard ML algorithms such as **LR,RF,XGBoost and SVMs** Classifiers and compared the results with anomaly detecting algorithms: **Isolation Forest algorithm, One Class SVMs and Local Outlier Factor algorithm**
- Used **ROC-POC** Curves and other metrics to analyse the models, and deployed them onto a **Streamlit** dashboard.

Tetris Game | *Course Project* | Guide: Prof. V. Rajbabu *(March '21 - April '21)*

- **Programmed** the **Pt-51 micro-controller** using **embedded C** to simulate a **Tetris Game** with an interfaced **LCD display**
- Established serial communication using a **USB-UART** module and successfully executed Tetris game query algorithm

Remote Controlled Bot | *XLR8 Competition* | Electronics and Robotics Club *(August'19)*

- Engineered a **Bluetooth-controlled** bot containing **on-board power supply** having **differential steering** in a team of 4 people
- Integrated **propellers**, **L293D** motor driver and **HC-05** for wireless communication
- Studied the various mechanical aspects of the vehicle ensuring a **small turning radius** and completed the obstacle course successfully maneuvering through the uneven surfaces and closed tunnel

Remote Controlled Airplane | *RC Plane Competition* | Acromodelling Club *(Oct '19)*

- Developed a **Remote-controlled** airplane containing **on-board power supply** in a team of 4 people
- Integrated **Propellers** , **A2212/10T 1400kv** motor driver and **servo motor** for controlling the airplane
- Studied the various mechanical aspects and aerodynamics of the airplane ensuring the **smooth maneuvering** of the airplane

Case Study | *Product Management* | Consult Club *(March '21 - April '21)*

- **Analyzed** and gave **Solutions** to the case provided in a team 2 people
- Provided the **UI mocks chart** to present the solutions using **Figma wireframe**
- **Identified** the metrics that will help to achieve the solution and explained the **advantages** and **disadvantages** of the solutions provided

Smart Investment in Medical Sector | *Course Project* | Guide: Prof. Arnab Jana *(March '21 - April '21)*

- **Researched** about various trends related to life insurances before and after the pre-COVID period
- Conducted surveys and collected data across **150** families related to the **logistics and investment** preferences
- Cleaned dataset using feature extraction and employed various pretrained ML models to achieve **76%** accuracy
- Final model predicts the **best** investment sector across Banks, Property, Life Insurance and Stock Markets depending upon the annual household income, current holdings and other logistics

Multi Functional ALU | *Course Project* | Guide: Prof. Virendra Singh *(Aug '20 - Nov '20)*

- **Designed** and used a 2x1 Multiplexer to make a 4 input XOR gate using **VHDL**
- Built a **16 bit Arithematic and Logic Unit** using **Kogge Stone Adder** , NAND and XOR operation
- Understood the working of Fast Adders in detail and executed **Kogge Stone & Brent Kung adders**

DC Power Supply | *Course Project* | Guide: Prof. B.G.Fernades *(August '19 - Nov '19)*

- Used transformer and **full wave bridge** rectifier with **capacitive filter** to get rectified wave.
- Used **Zener diode,IC 7805 and IC 7905** to get **regulated** DC supply from rectified wave output.

Musical Notes | *Course Project* | Guide: Prof. Maryam S.Baghini *(Mar'21 - May '21)*

- Played the upper octave of **7** Indian classical major notes using 8 slide switches and LEDs on **Krypton Board**
- Generated **4Hz frequency** from a 50MHz master clock using **clock divider** and notes were played in a loop using **FSM** using behavioural **VHDL**

Working Experience

Internship, Aerospace Department | *Summer Intern* | *Guide: Prof. Rajkumar Pant* *(May '21 - July '21)*

- Part of a 6 members team to **study and analyse** the topics of the course Introduction to Aerospace Engineering
- Prepared **slides, question materials, assignment** for the topics **Propulsion Engine, Development and factors affecting different types of Drag, Mach No., Sweep Wings** of the course
- Explored different **techniques** to make topics more interesting and simpler for the students

Positions Of Responsibility

Propulsion Engineer | *Hyperloop, IIT Bombay* | *Guide: Prof. Kowsik Bodi* *(October '20 - Present)*

*Student Initiative to **develop** an advanced and efficient Hyperloop Pod, Propulsion Subsystem*

- Understood the basics of Propulsion system of **Hyperloop** transport system
- Analysis and Simulation of **Linear Induction Motors** and **Cold Gas Thrusters** using **COMSOL**
- **Research** and **Analysis** of Propulsion system of different Hyperloop team participated in competition.
- **Development** of Propulsion System of the **Hyperloop pod** of the team
- Participated in the **European Hyperloop Week** along with other top teams of the world

Technical Skills

Programming	MATLAB, Embedded C, C++, Python, Julia, Octave, VHDL, x86 Assembly
Softwares and Tools	Arduino IDE, GNURadio, LaTeX , AutoCAD, SolidWorks, COMSOL, Numpy
Web Development	HTML, CSS, JavaScript, Bootstrap, Angular

Key Course Undertaken

Electrical Engineering	Electronic Devices,Probability and Random Processes, Analog Circuits, Signal & Processing, Power Engineering #, Microprocessors#, Control Systems , Digital Systems,Foundation of VLSI CAD*
Science	Quantum Physics and Application, Organic Chemistry and Inorganic Chemistry, Basics of Electricity and Magnetism, Physical Chemistry
Computer Science	Computer Programming and Utilization
Mathematics	Calculus, Linear Algebra, Complex Analysis, Differential Equations II
Miscellaneous	Economics, Engineering Graphics and Drawing, Molecular and Cellular Biology

*(*to be completed by November 2021)*
(#includes corresponding lab course)

Extracurricular Activities

- Completed a **year-long** professional course in Hockey under National Sports Organization **(NSO)** *2019*
- Participated in **Sports General Championship** in Hockey and Volleyball *2020*
- Secured **Second Position** in Inter School General Quiz Competition at District level *2018*
- Was Part of Hostel 16's Hockey and Volleyball team in **Freshiesta**, a three-day ensemble of sports events *2019*
- Successfully completed an eleven week course on **Machine Learning** by **Coursera** *2020*
- Secured **third position** in PubG Mobile Competition conducted by Hostel 16 sports council *2020*
- Secured **Second** position in the **Regional Handball Meet** in Tinsukia Region of Kendriya Vidyalaya Sangathan *2017*