



Kalvala Vivek
Computer Science & Engineering
Indian Institute of Technology Bombay

210050077
B.Tech.
Gender: Male
DOB: 7/7/2004

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	8.91
Intermediate	CBSE	NARAYANA HIGH SCHOOL	2109	95.80%
Matriculation	CBSE	NARAYANA HIGH SCHOOL	2019	83.60%

Pursuing a **Minor** in **Mathematics** at IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Qualified for **IMOTC** conducted by **HBCSE** for **3 consecutive years** (2019 & 2020 & 2021)
- Achieved **All India Rank 1** in **Indian Statistical Institute Admission Test** (2021)
- Achieved **All India Rank 162** in JEE-Advanced out of over 1,51,209 participants (2021)
- Achieved **100 percentile** in **Mathematics** in **JEE Mains** among 1 Million students (2021)
- Secured a National wide rank of 2 in the prestigious **KVPY** fellowship (2020)
- Among India's **top 77** candidates qualified for **Asian Pacific Mathematics Olympiad** (2019)

KEY PROJECTS

Railway Planner

(Autumn 2022)

Guide: Prof. Supratik Chakraborty — Course Project: Data Structures and Algorithms IIT Bombay

- Developed a rail planner in C++ using data structures such as **trees, dictionaries, heaps, tries** etc
- Optimized station search-completion feature by implementing a **trie** of station names
- Implemented a **hash function** to efficiently search and store station names in dictionary
- Implemented **priority queue and heap** data structures to fetch up reviews based on rating
- Implemented **KMP** algorithm to process reviews and used quicksort algorithm to list departures.

Fast Chat

(Autumn 2022)

Guide: Prof. Kavi Arya — Course Project: Software Systems Lab

IIT Bombay

- Building a network of clients interacting with each other with help of servers acting as mediators
- Working towards achieving **high throughput with limited resources** dedicated for the servers
- Ensuring **low latency** of individual message deliveries and **E2E encryption** between clients
- Using **authlib** library for authentication, **PostgreSQL** server database and bash for collecting results

Image Processing and Data Analysis

(Autumn 2022)

Guide: Prof. Suyash Avate — Course Project: Data Analysis and Interpretation

IIT Bombay

- Algorithm for Euclidean Planar uniform Sampling, implementation of **PCA** for Hyperplane Fitting
- Linear Regression on scatter-plots; process handwritten digits, Character Recognition using PCA
- **Dimensionality Reduction**, visualize 28x28 pixel image on 84-D Hyperplane, maximize Dispersion
- **Reverse Image Processing** to get back Original image from 84-Coordinate system
- Generate new fruit images from given Sample; their Classification Grouping with real fruit images

Personal Website

(Autumn 2022)

Guide: Prof. Kavi Arya — Course Project: Software Systems Laboratory

IIT Bombay

- Developed a **responsive website** containing various pages demonstrating various features in them
- Made the website responsive using **CSS and Bootstrap** and added interactive page using **Javascript**

OTHER PROJECTS

Tic Tac Toe

(Autumn 2022)

Guide: Prof. Kavi Arya — Course Project: Software Systems Laboratory

IIT Bombay

- Developed a two player tic-tac-toe game using **Socket Programming** in Java
- Implemented client-server architecture model in Java to develop an interactive game of tic-tac-toe

Random Walkers

(Autumn 2022)

Guide: Prof. Suyash Awate — Course Project: Data Analysis and Interpretation

IIT Bombay

- Designed an algorithm to check the probability distribution of positions of random walkers as Gaussian
- Verified the law of large numbers by making various plots and distributions in matlab
- Simulated **N Random Walkers** using MATLAB to obtain a **Gaussian distribution** plot

POSITIONS OF RESPONSIBILITIES

Teaching Assistant

(Autumn 2022)

Prof. Sanjoy Pusti — Course: Calclul 1

IIT Bombay

- Worked as Teaching Assistant for **MA 109** (Calculus 1) course under professor Sanjoy Pusti
- **Mentored a batch of 40 students** by taking weekly tutorials and collecting their exam papers.
- Interaction with Professor with problems of students and solving the tutorial sheets every week.

INTERESTS

- Web Development, Data Interpretation, Statistics, Plane Geometry
- Cricket, Badminton, Table Tennis, stand-up comedy, movies critics, Mobile Games, PC Games

TECHNICAL SKILLS

Programming Languages	C++(Proficient), Java, Python, Bash, Doxygen, Sphinx
Web Development	HTML, CSS, JavaScript
Softwares, Libraries	Git, L ^A T _E X, MATLAB, Numpy, Matplotlib, AWK, Sed

COURSES UNDERTAKEN

Computer Science	Design and Analysis of Algorithms*, Computer Networks*, Logic for computer Science*, Digital Logic Design and Computer Architecture*, Perfect Matchings:Algorithms and Complexity*, Data Structures and Algorithms, Data Analysis and Interpretation, Discrete Structures, Software Systems Lab, Abstractions and paradigms for Programming, Computer Programming and Utilization
Mathematics	Calculus 1, Calculus 2, Linear Algebra, Differential Equations, Real Analysis
Miscellaneous	Quantum Physics and Application, Electricity and Magnetism, Physical Chemistry, Organic and Inorganic Chemistry, Introduction to Biology, Engineering Graphics and Drawing, Introduction to Electrical and Electronics Circuits

**To be completed by April 2023*

EXTRACURRICULAR

- Completed **one year military training** at **National Cadet Corps(NCC)** IIT Bombay (2021-22)
- Fired 15 Rounds of Bullet from **0.22 Deluxe Rifle** at **Colaba firing Range** (2022)
- Participated in the **CodeWars-V1**(Programming contest) conducted by WnCC IIT Bombay (2021)
- Participated in **Call of Duty** Tournament in CSE department organised by CSEA (2022)