



Ved Mangesh Khandekar
Mechanical Engineering
Indian Institute of Technology Bombay

20D170019
B.Tech.
Gender: Male
DOB: 27/7/2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2024	
Intermediate	Maharashtra State Board	City Pride Jr. College	2019	
Matriculation	CBSE	City Pride School	2017	

Pursuing a minor degree offered by the Department of Computer Science and Engineering

Scholastic Achievements

- Among **28 out of 1200+** freshmen awarded a **branch change** to **Mechanical Engineering** *Jul 2021*
- Awarded **10/10** grade in the **CS 101, ME 119, EN 110** and **ME 206** courses *Mar 2021*
- Secured **99.84 percentile** in **JEE (Advanced)** out of over 0.15 million candidates *Sep 2020*
- Secured **99.46 percentile** in **JEE (Main)** out of over 1 million candidates *Sep 2020*
- Awarded **rank 129 across Maharashtra** in **MHT-CET 2019** *Jun 2019*
- Received the prestigious **KVPY fellowship** from IISc with an **AIR 1187** *Dec 2018*
- **Represented India** at **iEARN** Natural Disaster Youth Summit at **Kyoto, Japan** *Mar 2015*

Work Experience

Intern – Information Technology | Marsh McLennan Global Services India Pvt. Ltd. *May — Jul 2022*

- Given an offer to **extend** the summer internship **into the semester** on basis of good performance
- Created a **prototype** of a **virtual office** in the Decentraland game engine using **TypeScript**
- Gained a deep understanding of related **Web 3.0** technologies like **blockchains, NFTs and DeFi**
- Enhanced code **performance** by using data structures, algorithms and **memory optimizations**
- Improved code readability by using design patterns like the **Entity Component System architecture**

Key Projects

OS Programming Assignments | Prof. Mythili Vutukuru *Jan — May 2022*

- Built a **simple shell** using **fork()**, **wait()** and **exec()** family of system calls and also handled edge cases
- Implemented **demand paging in xv6** along with system calls to count virtual and physical pages
- Wrote a custom implementation of **semaphores** using pthread **mutexes** and **condition variables**

Option Pricing Models and their Accuracy | FinSearch 2022 *(Ongoing)*

- Read articles on call and put option contracts and **Black-Scholes** and **binomial option pricing theory**
- Wrote a **Python** program utilizing **numpy** and **scipy** to compute the **value** of an option and its **Greeks**
- Used the Black-Scholes-Merton and binomial option pricing model for the above program

Digipad, DevCom Project *Jun — Oct 2021*

- Ideated and developed a solution to use **smartphone like a pen tablet** as a part of 5 member team
- Wrote backend in **Nodejs** which facilitates **communication of devices** on the **same WiFi network**
- Utilized **socket programming** to deliver a **high throughput** and **low latency** stream of data
- Worked on the networking backend in **Electron** for the desktop app and in **Flutter** for Android/iOS

Lasso, CS 101 Course Project | Prof. Bhaskaran Raman *Mar 2021*

- Improved and **added more features** to an **arcade game written using C++**
- **Used Makefiles** and **GNU make** to compile the source files and deploy the game as an executable
- **Applied OOP concepts** to design an extensible architecture for the game
- Grade 10/10 in CS 101 was awarded only after successful completion of this project

- Building a rudimentary but efficient and fast **ray tracer in C** using the **Phong reflection model**
- Implemented the **mathematical foundation** for the ray tracer using **structures and pointers in C**
- Writing **extensive and exhaustive unit tests** for all the functions being used to compute ray trajectory
- Using **CMake** as a **cross-platform build system** and **CTest** for executing **unit tests**

Backend for Real Time Emotion Detection | Project for ITC freshers' orientation

Nov 2021

- Converted a Google Colab project for real time emotion detection into an independent web app
- Rewrote Python code using **Tensorflow.js** and **openCV.js** in client side JavaScript
- **Web app** supported **300+ concurrent users** as compute heavy code was implemented on client side

Spanning Tree Protocol Simulator, CS 224M Course Project | Prof. Varsha Apte

Oct 2021

- Implemented the **distributed simulation logic** for spanning tree protocol in C++
- Designed a modular architecture using OOP to simulate different interacting components in STP
- Utilized efficient data structures from the **C++ STL** to ensure an **optimized implementation**

IITinder | Season of Code 2021

Apr — Jul 2021

- Implemented the **registration** and **authentication** backend for the **Android** app in Java
- Used **Firebase Authentication APIs** to only allow students with **valid IITB LDAP IDs** to sign up
- Designed the **JSON schema** for **Firebase Realtime Database** and used its APIs to store user data
- Designed the core match making algorithm and optimized it by using a **caching strategy**

Positions of Responsibility**System Administrator** | Hostel 3, IIT Bombay

Jun 2022 — Present

- Responsible for **monitoring** the hostel LAN to ensure **smooth operation** and **high availability**
- Debug and fix issues faced by the hostel residents by using **practical networking knowledge**
- **Coordinate** between the residents and the Computer Centre to get **network related** repairs done

Core Member | Developers' Community

Mar 2021 — Apr 2022

- Official member of **IIT Bombay's largest Developers' Community** (DevCom)
- Responsible for **ideating, developing and deploying out of the box applications** for the institute
- DevCom maintains many **systems used by over 10,000 students**, e.g. SSO, RVP, LAP etc.
- Worked on **Digipad**, a seamless way to **use any smartphone like a pen tablet**

Convener | Web and Coding Club

Jun 2021 — Apr 2022

- Part of a **10 member team** catering to 10,000+ students enthusiastic about programming
- **Moderator** for the App Dev course in **Technical Summer School 2021** with over 300 participants
- Wrote articles explaining **widgets in Flutter**, **using packages** and basic **introduction to APIs**
- **Wrote articles on DSA** for a workshop on "Internship Preparation for profiles in IT and Software"
- **Mentored students** for WnCC CodeWars and held sessions on Python and strategy implementation

Technical Proficiency

Programming	C, C++, Java, Python, PHP, bash, SQL, TypeScript, JavaScript, Haskell, Clojure, Go, x86-64 and ARM assembly
Development	Android (Flutter and Java/XML); numpy, pandas, scipy; Django, Flask, Jekyll; Electron, Qt, Java Swing, JavaFX; Godot game engine; Tensorflow, OpenCV; Prisma (ORM)
Tools	git, ssh, L ^A T _E X, gnuplot, radare2, Wireshark, gdb, GNU autotools, cmake, gcc, Microsoft Visual Studio 2019, GNU/Linux, FreeBSD, OpenBSD, emacs, blender

Key Courses Undertaken

Computer Science	Computer Programming and Utilization, Computer Networks, Operating Systems, Microprocessor and Automatic Controls (in progress)
Mathematics	Calculus I, Calculus II, Linear Algebra, Ordinary Differential Equations, Introduction to Numerical Analysis