Spandan Sachin Anaokar | **210260055**
Engineering Physics | **B.Tech.**
Indian Institute of Technology Bombay | **Gender: Male**
DOB: 10/06/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	9.09
Intermediate	HSC, Maharashtra	PACE Junior Science College	2021	95.83%
Matriculation	ICSE	Ryan International School, Malad-(w)	2019	99.00%

Pursuing a **Minor Degree** in **Computer Science and Engineering**

Scholastic Achievements

- Currently holding **Department Rank** of **7** in the Engineering Physics batch 2025 consisting of 64 students *(2023)*
- Secured **All India Rank 646** in **JEE-Advanced** out of nearly 150,000 candidates all over India *(2021)*
- Secured **99.81% Percentile** in **JEE-Mains** with a **100% Percentile** in Maths out of nearly 1 million candidates *(2021)*
- Secured **All India Rank 306** in 11^{th} and **305** in 12^{th} in **KVPY** and was thus awarded a fellowship *(2020, 21)*
- Secured **AIR 14** in the **Aptitude Test** conducted by the Indian Institute of Scientific Education and Research *(2021)*
- Qualified for **OCSC Camp** for **IJSO** (International Junior Science Olympiad) by being in the **Top 43** *(2017-18)*
- Qualified for **OCSC Camp** for **IOAA** (International Olympiad of Astronomy and Astrophysics) by being in the **Top 35** across all of India in the **INAO** (Indian National Astronomy Olympiad) *(2019-20)*
- Awarded the **UNSW** (University of New South Wales) **Gold Medal** being **1 of 6 students** who got this medal in Science in Class 4 across **the world**, by scoring the highest marks in **IAIS** (International Assessment for Indian School) in the entire region consisting of **India and 15 other countries** *(2013-14)*

Technical Projects

Data Structure and Algorithm & CP
(Summer 2022)
Seasons of Coding, WnCC

- Explored the various **Data Structures** and the related **Algorithms**, including but not limited to Hashing, Stack, Queue, Dequeue, Tree, Graph, Greedy Algorithm, Backtracking, Dynamic Programming, Trie, and Disjoint Sets
- Studied and Comprehended over **200 lecture videos** on **GeeksForGeeks** to understand all popular concepts of DSA
- Solved **200+** algorithm problems given on **GeeksForGeeks** & **CSES** and wrote solution codes using C++ and Python
- Created an **educational video** that introduces topics learnt during the course along with a brief overview of their utility and explains the specific characteristics of each **data structure**, and the need for such structures in Computer Science

Year of Security
(January 2022 - December 2022)
Cyber Security Community

- Studied the topics involved in the field of Cyber Security starting with **Cryptography** and concepts such as **Forensics** (basics, steganography, network, and images), **Web Exploitation**, **Reverse Engineering**, and **Binary Exploitation**
- Solved Assignments in **Linux** which involved writing bash scripts for automating unzipping a large number of nested zips, using to search for hidden links on multiple webpages, and modifying environment variables to get the flag in CTF
- Wrote codes in Python to use **eval vulnerabilities** and exploit them to access the protected information, and to make a **bot** with a high enough winning probability to win **25 successive** games of minesweeper using **recursion** and **OOP**
- Comprehended multiple encrypting methods from **classical ciphers** to **RSA algorithm** and their application
- Solved problems related to finding the plaintext from a given **cipher** that could be in the forms of text, binary, or image and deciphering it by using multiple ways of **encoding** and **decoding** from Caeser cipher to Diffie-hellman key exchange

Automating Nano-Optical Measurement
(July 2022 - Present)
Supervised Learning Project | Guide: Prof. Anshuman Kumar

- **Developed** a code with the intent to automate the process of **data capturing** by using nanopositioning control methods
- **Implemented** concepts of **OOP** in Python to call default functions from **command libraries** of software packages of laboratory instruments like **Thorlabs CCS**, **Nanomax**, and **Thorcam**, and transfering **data** to and from them
- **Engineering** an algorithm that communicates with multiple instruments to **synchronise** the process of change of experimental conditions and input processes that will completely **automatize** complicated experimental procedures

Winter in Data Science *(December 2022 - Present)*
Analytics Club

- Completed a fortnight long **bootcamp** learning the basic concepts of **Data Science** like Exploratory Data Analysis, Supervised Learning Algorithms, Natural Language Processing, Predictive and Prescriptive Analysis, and Neural Networks
- Getting selected for project '**Into to AI**' which teaches Graph search algorithms, Logical inference Bayesian networks, Markov models, and Reinforcement Learning before attempting to build a **next gen AI** based e-commerce platform

Data Analysis of P-P collisions (Course Project) *(October 2022 - December 2022)*
Data Analysis and Interpretation | Guide: Prof. Sadhana Dash

- Worked on **2 million** datasets consisting of data of proton-proton collisions and **informationally analyzed** them
- **Classified** the datasets depending on conditions of each collision and plotted graphs using software **ROOT**

Bubble Trouble Game Development (Course Project) *(January 2022 - April 2022)*
Computer Utilization and Programming | Guide: Prof. Parag Chaudhuri

- Developed a bubble shooter game using **Simplecpp graphics** consisting of 10 levels which involve bubbles that bounce off walls, and take a health point from the shooter on hitting him while making him immune to damage for a short time
- Featured power items that could increase health or freeze the bubbles by efficient use of **classes** and **methods**
- Programmed to split big bubbles when hit into faster bubbles. Passing a level results in more bubbles in the next levels
- Implemented **OOP** encompassing **Abstraction** and **Encapsulation** by use of header files and classes, and STL Libraries

Modelling of Biological Systems(Course Project) *(October 2022 -December 2022)*
Non-linear Dynamics | Guide: Prof. Amitabha Nandi

- Part of a team of 4 analyzing, recreating, and presenting the results of a research paper on the **Dynamics** of the **Regulatory** and **Signaling Pathways** of the Cell, consisting of the **mathematical modelling** of the cell processes
- Analyzing the model of the biological system by **simulating** it on Python **numerically** over time by the **Runge-Kutta** method, and plotting the Non-linear Dynamics with **Matplotlib** thereby making predictions of the nature of the system

Tic-Tac-Toe AI Game Development *October 2022*
Hobby Project

- Developed an **AI algorithm** in Python to play Tic Tac Toe with the user, and win a considerable number of times
- Designed **lists** denoting how close a given winning combination is to completion for both the AI and the user. Any move results in **shifts** of combinations across the lists and the **first combination** to get in the **final list** leads to a win

Technical Skills

Programming	Python, C++, C, HTML, R, QBasic
Softwares and Tools	Git, AutoCad, LaTeX, Jupyter, LT Spice, ThorSpectra, VS Code, Piezo Controler(MDT69XB)
Packages	Numpy, Pandas, Matplotlib, SciPy

Key Courses Taken

Computer Science	Computer Programming and Utilization, Logic for Computer Science, Data Structure and Algorithms*
Mathematics	Calculus I & II, Linear Algebra, Differential Equations I & II, Complex Analysis, Numerical Analysis*
Physics	Data Analysis and Interpretation, Non-linear Dynamics
Miscellaneous	Introduction to Electronics, Digital Systems*

** To be completed by end of April 2023*

Extracurricular Activities

- Awarded a **silver medal** twice in 6^{th} and 9^{th} in Homi Bhabha Young Scientist Exam conducted all over Maharashtra in 6^{th} and 9^{th} Class. Made a **Research Project** of about 60-70 pages on topics "Raintrees in Pain" and "Mandapeshwar Caves- Boosting Tourism" respectively suggesting a solution to real-world **problem statements** *(2015, 2018)*
- Awarded a **gold medal twice** in Mathematics Prodigy exam held in 5^{th} and 8^{th} all over **Maharashtra** *(2014, 2017)*
- Played and won **3rd place** in inter-school Chess Competition in Mumbai after practising **Chess** for years *(2009)*
- Awarded the **Best Student in Sports** certificate in School for winning at local chess championships *(2018)*
- Awarded the **Student of the year** certificate with rank **3rd** in the entire school by the Times of India NIE based on Academics, Sports, Leadership, Artistic flair, Literary talent, and multiple other qualities judged by multiple tests *(2019)*
- Participated in **CodeWars** – India's First Bot Programming Contest and developed a bot that could collect elixir and virus and, use them to destroy the enemy thus involving use of creative algorithms to beat the opponent bot *(2021)*