NISHANT ABHANGI

D-101 Selenium Heritage, Kalawad Road, Rajkot 360005, India

+919909496457 | abhangin@mit.edu | Github : https://github.com/the-nishant

EDUCATION

Massachusetts Institute of Technology (MIT) *September 2020 - Present*
Bachelor of Science, double major in Computer Science and Engineering and Mathematics *Cambridge, MA*
Double minor in Physics and Economics | GPA : Not Awarded yet

Indian Institute of Technology Bombay (IIT Bombay)[1] *August 2019 - August 2020*
Bachelor of Technology in Computer Science and Engineering | GPA : 10/10 *Mumbai, India*

AWARDS & DISTINCTIONS

- **Institute Rank 1** among all sophomore undergraduate students at IIT Bombay *2019-2020*
- **Gold Medalist (World Rank 9)** at the 50th International Physics Olympiad (**IPhO**) *2019*
- **Gold Medalist (World Rank 40)** at the 49th International Physics Olympiad (**IPhO**) *2018*
- **Gold Medalist (Asia Rank 18)** at the 18th Asian Physics Olympiad (**APhO**) *2018*
  Youngest Indian gold medalist till date
- **Gold Medalist (World Rank 3)** at the 13th International Junior Science Olympiad (**IJSO**) *2016*
- Achieved **All India Rank 6** in **JEE-Advanced** out of **175,000** candidates *2019*
- Secured **All India Rank 6** in **JEE-Mains** out of **1.15 million** candidates *2019*
- Awarded **Aditya Birla Scholarship** for academic excellence and humane leadership values *2019*
- Felicitated by India's Prime Minister **Narendra Modi** and Russia's President **Vladimir Putin** *2018*
  for winning Gold Medal at the International Physics Olympiad
- Honored with **National Child Award for Exceptional Achievement** in Academics *2017*
  by **President of India Ram Nath Kovind**
- Secured Kishore Vaigyanik Protsahan Yojana (**KVPY**) fellowship with **All India Rank 1** *2017*
- Awarded National Talent Search Examination (**NTSE**) scholarship by NCERT, Government of India *2017*
- Secured a position in **top 50** in the Indian National Astronomy Olympiad (**INAO**) *2017, 2018, 2019*
- Secured a position in **top 35** in the Indian National Chemistry Olympiad (**INChO**) *2019*

PROJECTS

Spoof Resistant Face Recognition *May 2020 - June 2020*
Institute Technical Summer Project, IIT Bombay
- Implemented an end to end pipeline in Python using **OpenCV** and **Tensorflow** to perform **liveness detection** and **face recognition** on the faces detected from a video stream by a ResNet for **single shot detection**
- Trained a **CNN** for liveness detection and used dlib's **5-point facial landmark model** followed by a **ResNet** to extract 128 dimensional encodings of the faces which were fed to a **support vector machine** for face recognition

Django Blog Website *March 2020*
Developers' Community, IIT Bombay
- Built a website using **Django**, HTML and CSS which supports **user authentication** and profile picture **uploads**
- Implemented features like **sorting**, **filtering** and **pagination** to display latest blog posts and filter posts by a user

Android Messaging App *April 2020*
Developers' Community, IIT Bombay
- Developed a messaging app using **Android Studio** and **Firebase** which supports user authentication by mobile
- Implemented friend requests, searching users, restricting chat only between friends, group chats and **file uploads**

Line Follower Bot *September 2019*
Electronics and Robotics Club, IIT Bombay
- Built a line follower bot using **Arduino Uno** as a microcontroller and **infrared sensors** for line detection
- Added additional features like manual **bluetooth control** and **obstacle detection** using ultrasonic sensors

Ubisoft Game Jam *October 2019*
Ubisoft Mumbai Studio
- Awarded the **5th** position in IIT Bombay for developing a protoype for a 2D platformer game in C# and **Unity**

Machine Learning with Kaggle *April 2020 - June 2020*
Seasons of Code, Web and Coding Club, IIT Bombay
- Solved Kaggle problems like Titanic using **Random Forests** and Housing Prices using **Lasso Regression**
- Performed **data preprocessing** like handling missing data, minimizing skew, feature scaling and feature engineering

---

[1]Transferred to MIT after completing one year at IITB

Quantum Computation *April 2020 - June 2020*
Summer of Science, Maths and Physics Club, IIT Bombay
- Developed knowledge of quantum mechanics, **reversible computation** and quantum measurement
- Learnt teleportation and superdense coding, Deutsch-Jozsa algorithm, **Grover's algorithm** and **Shor's algorithm**

EXPERIENCE

IIT Bombay Tapestry Pooling Group *July 2020*
Backend Web Developer *Mumbai, India*
- Developed the backend server using **Django REST Framework** and established the schema considering the needs of the frontend team for the website of a smart pooling technique for COVID-19 testing called tapestry pooling
- Implemented several APIs like **user authentication APIs** using **simple-jwt** for JWT authentication and **pooling tests information APIs** with filtering, searching and sorting by using the Django REST Framework **JSON API**

Homi Bhabha Center for Science Education *February 2020*
Grader *Mumbai, India*
- Graded over **200 papers** of the **Indian National Physics Olympiad** and ensured consistency in grading by defining **detailed marking schemes** for all possible solutions and by verifying grades given by other graders
- Developed several **alternative solutions** to a **rotational dynamics** problem and analyzed it from various physical principles which culminated in a paper providing insights on the mathematical and physical analysis of such systems

PUBLICATION

A Jarring Bullet – An Indian National Physics Olympiad 2020 problem *Accepted April 2020*
Resonance: *Vivek Lohani,* **Nishant Abhangi***, Sitikantha Das, Amitabh Virmani*

TECHNICAL SKILLS

Each of the following are sorted in roughly decreasing order of experience.
Programming Languages Python, C++, MATLAB, Lua, RISC-V asm, Minispec, Java, SQL, Arduino, Julia, C#
Data Science and Machine Learning Tensorflow, Keras, Numpy, Matplotlib, Scikit-learn, OpenCV, Pandas
Web, App and Game Development Django, Django REST Framework, HTML, Android Studio, LÖVE, Unity
Miscellanous LaTeX, git, AutoCAD, SolidWorks, Microsoft Office

POSITIONS OF RESPONSIBILITY

Cofounder and President, *Physics Club, Disha Delphi Public School* *August 2017 - March 2019*
- Coordinated the activities of the club, organized weekly quizzes and taught special topics for **Physics Olympiad**
Convenor, *Maths and Physics Club, IIT Bombay* *April 2020*
- Introduced a new online 2 days long event called **Physics Cup** for challenging Physics questions
Organizer, *Mood Indigo and Techfest, IIT Bombay* *December 2019*
- Handled the crowd and publicised events for the Lecture series at the cultural and technical fests of IIT Bombay

COURSEWORK

- **Mathematics** Fundamentals of Statistics*, Quantum Computation*, Quantum Information Scienceˆ, Linear Algebra, Single Variable Calculus, Multivariable Calculus
- **Computer Science** Computation Structures*, Introduction to Algorithms*, Fundamentals of Programming*, Introduction to Machine Learning*, Theory of Computation*, Elements of Software Constructionˆ, Computer Systems Engineeringˆ, Design and Analysis of Algorithmsˆ, Interconnected Embedded Systemsˆ, Advances in Computer Visionˆ, Abstractions and Paradigms in Programming, Introduction to Computer Science and Programming
- **Physics** Electromagnetism II, Quantum Physics I, Vibrations and Waves, Electromagnetism I, Classical Mechanics I, Physics Lab
- **Others** Introductory Biology, Physical Chemistry, Inorganic and Organic Chemistry, Chemistry Lab, Engineering Graphics and Design, Workshop Practice, Principles of Microeconomics*, Principles of Macroeconomicsˆ
- **Coursera** Deep Learning Specialization, Python for Everybody specialization, Machine Learning

* To be completed by Fall 2020 ˆ To be completed by Spring 2021

EXTRACURRICULAR

- Secure **All India Rank 1** in Technothlon Mains, an exam of logic conducted by **IIT Guwahati** students *2016*
- Volunteer at Green Campus, IIT Bombay under the **National Service Scheme** *2019-2020*
- Secured a position in **top 4** in India in Mimamsa, conducted by IISER Pune *2020*
- Secured **Rank 1** in the RESEARCHx Quiz, IIT Bombay *2019*
- Acheived **Rank 3** in the Energy Quiz, IIT Bombay *2019*