Ghugarkar Omkar Uttam
Chemical Engineering
Indian Institute of Technology Bombay

190020044
UG Second Year
Male
DOB: 07/08/2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2021	0.00
Intermediate/+2	HSC	Bhartiya Jain Sanghatna	2019	85.69
Matriculation	SSC	Priyadarshani High School	2017	92.20

Pursuing a Minor Degree in **Industrial Engineering and Operational Research** at IIT Bombay

Scholastic Achievements

- Awarded with **Maharashtra State Government Scholarship** for Secondary school education *(2014)*
- Recipient of **INSPIRE** Scholarship awarded by **Dept. of Science and Technology, Govt. of India** *(2019)*
- Secured **District Rank 1** in **Maharashtra Talent Search Examination** (MTSE) *(2017)*

Key Projects

SeDriCa, Innovation Cell, IIT Bombay | Junior Perception Engineer *(Sep 2020 - Present)*

Currently one of the 11 finalists among 259 teams in Mahindra RISE Driverless Car Challenge

- Working in a team of **24** to develop **India's first Level 5** self driving car, which is a fully **Autonomous car** customized for the **Indian road and traffic conditions** which includes **efficiency to safety** considerations
- Programming the **Autonomous Parking** feature of the car using Inverse Perspective Mapping, Neural Network models such as **YOlOv3, LinkNet** and finalized the **decision making** procedure for the same

Face Recognition with Liveliness Detection | COVID - 19 Project *(Jul 2020 - Aug 2020)*

Tinkers Laboratory, IIT Bombay

- Created a face recognition system which detects face using **Haarcascade classifiers**, uses a **transfer Learning** model to check if the face is real or fake and recognizes the face using the **Support Vector Machine** algorithm
- Implemented the transfer Learning version of **CVPR 2015** paper **FaceNet**: *A Unified Embedding for Face Recognition and Clustering* for generating the **128-D embedding** which serves as an input to Support Vector Machine
- Integrated system for **10 users** which had an accuracy of **96 %** on face recognition and **90%** on liveliness detection

S.A.S.H.A - Smart Artificial System with Home Automation *(Feb 2020 - Jul 2020)*

Institute Technical Summer Project, IIT Bombay

- **Led** a team of 4 to create a **multi-feature, security-enabled Chatbot** that controls electric appliances along with other features like general conversation using Natural Language Processing, news and weather report, jokes
- Programmed the code for a chatbot in python using multiple libraries, deployed on **Telegram platform** for a large user-base, allow user to log the commands into a file for history and created a home setup generator for integration
- Created a **User-interactive** website to facilitate house appliances-modification and live-tracking and added **environment-friendly** and **energy-saving** features such as the **Green House Mode** and the **Night Mode**

Literature Review of Measurement Theory in Quantum Mechanics *(Mar 2020 - Aug 2020)*

Project Guide:Prof Amber Jain, Department of Chemistry, IIT Bombay

- Studied the theory of Quantum mechanics from it's origin and understood the various flaws in the current theory
- Analyzed and compared various measurement theories such as Bhomian Mechanics, Many World Interpretation of Quantum Mechanics, Qbism, Ghirardi–Rimini–Weber theory and the Continuous Spontaneous Localization model
- Discussed and examined experiments, supporting and contradicting the various measurement theories

Neural Networks and Deep Learning | Summer Research Project *(Apr 2020 - Jun 2020)*

Summer of Science, Maths and Physics Club, IIT Bombay

- Analysed various topics in machine learning - linear regression, regularization, logistic regression, bias-variance, Dropout, k-means Clustering, Principal Component Analysis, Support Vector Machine, Recommender Systems
- Studied **dense layers, Convolutional Neural Networks, Inception layers, Recurrent Neural Networks** and analyzed various parameters and hyperparameters for tuning and increasing the accuracy of the model
- Programmed Classifiers, Neural Style transfer, text to emoji and machine translation using **Keras**

Neural Super Sampling *(Aug 2020 - Present)*

Course:Machine Learning for Remote Sensing - II | Prof. Biplab Banerjee, CSRE

- Implementing the **ECCV 2018** paper **ESRGAN**: *Enhanced Super-Resolution Generative Adversarial Networks* and used the **Residual-in-Residual Dense Block (RRDB)** as the basic network building unit
- Creating relativistic **Generative Adversarial Network(GAN)** to let the discriminator predict relative realness

Autumn Of Automation *(Jul 2020 - Aug 2020)*

Innovation Cell, IIT Bombay

- Completed extensive training and mastered the topics such as OpenCv, Neural Networks, ROS and Gazebo
- Created a **Gazebo Simulation** in which implemented **Obstacle detection, Lane detection** for **master bot** using lidars, cameras and integrated using ROS, Python, OpenCV and a **slave bot tracking** the master bot

Position of Responsibility

Member of Investment Team *(Oct 2019 - Present)*

Finance Club, IIT Bombay

- Member of a team of **30+ individuals** mentored by **corporate leaders** aiming to create a **portfolio** managed and run solely by students and as well as to provide IITB students with opportunities to learn investment
- Contributed to the **Information technology** section of monthly **magazine** of club **Finstreak**
- Studied and had discussion on various concepts of Finance by reading Books like **The Intelligent Investor**

Hospitality and Public Relation's Co-ordinator | Mood Indigo *(Jun 2020 - Present)*

Asia's largest college cultural festival

- Ideated the **College Connect Program** which develops a strong link between Mood Indigo and students all over India and planned various **activities, competitions, quizzes** for the Portal and developed the marking scheme
- Appointing and coordinating with more than **1k+** College Ambassadors all across the country
- Organizing weekly events and workshops to engage with **30k+** students from over **1000+** colleges

Technical Skills

- **Programming:** C++, Python, MATLAB, HTML, CSS, JavaScript, SQLite
- **Software:** AutoCad, SolidWorks, Arduino IDE , Git, LaTeX
- **Frameworks:** Bootstrap, TensorFlow, PyTorch, Keras, Robot Operating System (ROS), Gazebo

Key Courses Undertaken

- **Chemical Engineering:** Introduction to Chemical Engineering, Introduction to Transport Phenomenon*, Chemical Thermodynamics I*, Computational Methods Lab*, Numerical Analysis*
- **Maths, Physics, Chemistry, Biology:** Calculus, Linear Algebra, Partial Differential Equations*, Quantum Mechanics and applications, Basics of Electricity and Magnetism, Physics Lab, Physical Chemistry, Chemistry Lab, Organic and Inorganic Chemistry, Cellular Biology, Physical Biology, Biomedical Engineering
- **Machine Learning:** Machine Learning", Deep Learning Specialization",Machine Learning for Remote Sensing - II*
- **Other:** Engineering Graphics and Drawing, Operations Analysis, Computer Programming and Utilization, Sociology*, Python Specialisation", The complete financial Analyst, Training and investment course"

(":Online Courses) (:to be completed by Dec'20)*

Extracurricular Activities

Sports

- Completed an year long training in **Lawn Tennis** under National Sports Organization(NSO) *(2019 - 2020)*
- Completed professional training to gain **Red Belt first White Stripe Rank** in **Tae-kwon-Do** *(2010 - 2015)*

Miscellaneous

- Competed in **Digit Recognizer** competition on Kaggle and obtained accuracy of **98.71**% *(2020)*
- Investing actively in stock listed at **BSE** and **NSE** and reading literature to gain more insight for the same *(2020)*
- Participated in the **Remote Controlled Plane** competition organised by **Institute Technical Council** and working together in team of 4 built a trainer plane robust to damages successfully from scratch *(2019)*
- Successfully Completed Boot camp of **Analytic, Tinkers Laboratory, Front end Web development** *(2020)*
- Attended the **Entrepreneurship** boot-camp which was organised by The Entrepreneurship cell *(2020)*