Siddhant Kolke   19B030028

Chemistry   B.S.

Indian Institute of Technology Bombay   Gender: Male

DOB: 31-08-2001

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2023	
Intermediate	CBSE	Army Public School	2019	95.80%
Matriculation	ICSE	The Bishops Co-Ed School, Kalyaninagar	2017	95.00%

Pursuing a **Minors** in **Artificial Intelligence** and **Data Science** under C-MInDS, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- **Department Rank 2** in the Department of Chemistry Batch of '19, IIT Bombay
- Amongst the **99.3rd percentile** out of **~1 million candidates** appearing for the **JEE Mains** Examination *[2019]*
- Secured a rank of **2086** (**98.8 percentile**) out of **1.73 lakh candidates** registered for **JEE Advanced Exams** *[2019]*
- Achieved a percentile of **99.8** in MHT-CET '19 engineering entrance examinations held all over Maharashtra *[2019]*
- Recipient of **INSPIRE Scholarship** awarded by the Department of Science and Technology, India *[2019-Present]*
- Invited to the **VIJYOSHI** Science Camp '19, held by **Kishore Vaigyanik Protsahan Yojana (KVPY)** in **IISc** *[2019]*
- Awarded the CBSE Merit Certificate for coming within the **top 0.1 percentile** in Chemistry in 12th Boards *[2019]*

KEY PROJECTS

Cervical Cancer: In-Silico Analysis   *[2021]*
Research Project Guide- Prof. Sanjeeva Srivastava **|** *Proteomics Lab, IIT Bombay*
- Performed **extensive literature survey** to study the protocol of obtaining **differentially expressed proteins** in comparison to healthy cohorts in patient samples and cell-line studies
- Exploring the software **Perseus** and **statistical packages in R/ Python** in a methods-based approach to gather insights on **differential proteomic expression on big data** from MS instruments using normal-distribution-based missing value imputation, log transformation and student's t-test
- Compared established **molecular docking** software like Autodock4 and PyRx for determining potential **repurposing aspects** from a curated library of 80+ drugs in mitigating therapy resistance against cervical cancer

The CRISPR-Cas9 Superfamily: A Bioinformatical Dive   *[2020]*
Bioinformatics- Prof. Prasenjit Bhaumik **|** *Course Project*
- **Incorporated sequence data** of the Cas9 proteins of 2 bacterial families and drew up an **ancestral tree** to obtain insights **on homology and phylogenetics** of the defence mechanisms present in the various species.
- **Performed multiple sequence alignment** and inferred domain-wise insights between the Nuclease, CTD PAM locations of two candidate sequences from each family
- **Structurally validated** uniqueness of each Cas9 system fit with guide-RNA on **PyMOL** and identified niches for the use of each for gene-editing techniques in therapeutic research

Face-Mask Detection via Neural Networks   *[2021]*
Introduction to Machine Learning- Prof. Biplab Banerjee **|** *Course Project*
- Part of a 3-membered team which developed an application of **convolutional neural networks** to a live feed which distinguishes mask-wearers from defaulters using **Python and OpenCV** for webcam integration
- **Utilized Keras Libraries** for 2D convolution and MaxPooling, the best model yielding ~**98% accuracy** on classifying the validation set on training data, containing **some 1300+ images** (masked and non-masked faces)

Genetic Engineering and Genetics   *[April-June,2020]*
Summer of Science, MnP Club, ITC
- Studied the intricate **molecular machinery** involving DNA replication, encryption, translation, and transcription
- **Recombinant Linkage Maps** as well as mechanisms behind several CRISPR-cas9 systems were investigated
- Implemented randomized **bioinformatical approaches, Skew Maps** as well as **Greedy Algorithms** to search for DnaA boxes and consensus strings in **regulatory motifs** within bacterial genomes using **Python**

POSITIONS OF RESPONSIBILITY

Convener | *Chemistry Club* **|** *Institute Technical Council*   [*May '20- May '21*]
- Part of the **first-ever core council** for an institute-wide Chemistry Club
- **Co-ordinated** the **conduction** of the **Quarant-ene series** of webinars in collaboration with esteemed speakers and professors from departments of IITB as well as all over India
- Organised **RaScionix- a nation-wide** Chemistry competition which garnered **200+ applications** from all-over India being a key-member of the **Outreach, Content** and **Evaluation** team
- Led the **creative direction** of a regulated stream of quality content in the form of blogs and posts that brought in **800+ followers** on collective social media within **~5 months** of its inception

Academic Mentor | *D-AMP Council* **|** *Institute Student Membership Program*   [*May '21- Present*]
- **One of 12** selected into a council which oversees mentorship and academic interests of sophomores
- **Mentoring 6 students** of various backgrounds as their one-year-senior in the department
- **Co-leading** the **Core Team** within the council which safeguards and furthers the Chemistry and interdisciplinary interests of the department by holding initiatives to bridge the gap and provide a community for like-minded students

Teaching Assistant | *CH105* **|** *Organic and Inorganic Chemistry*   [November *'20-Jan '21*]
- Played a part of a select number of undergraduates selected to streamline the execution and evaluation of the **Inorganic section** of the CH105 course held for **over 1000** freshmen
- Facilitated the smooth functioning of the course alongside professors by virtue of **editing** and **uploading video content** for the course, along with databasing of the final assessments of students
- **Held a doubt session** for a **tutorial class** of **30+ students** to clear up concepts and fine-tune the material taught in class to cater to students' course related queries

RELEVANT COURSES UNDERTAKEN & INTERESTS

CHEMISTRY	Structure and Stereochemistry, Chemical Thermodynamics, Programming Techniques in Chemistry, Co-ordination Chemistry
INFORMATICS/ DATA SCIENCE	Computer Programming and Utilization, Introduction to Machine Learning, Introduction to Public Health Informatics (ongoing), Data Analysis
BIOLOGY	Modelling Biological Systems and Processes, Bioinformatics, Cell and Molecular Biology
NON-TECHNICAL	Economics, Philosophy (ongoing) Environmental Science and Engineering, Environmental Studies

CERTIFICATIONS & ACQUIRED SKILLS

FINANCE	▪ Completed a course on **understanding markets** and investing under a workshop held by CareerBright-an IIM Ahmedabad/IIT Bombay-alumni start-up ▪ Ingrained Fundamental Investing techniques such as **DCF Analysis, Expected Value Approaches** and **Sensitivity Analysis** as well as several case studies were looked into	*['20]*
ANALYTICS	▪ Utilised real data-sets to implement Linear and Polynomial **Regression Analysis** ▪ Drew conclusions of correlations utilizing **numpy, pandas** and **MatPlotLib** Libraries in **Python** as part of the **Data Analysis** Bootcamp under Analytics Club, IITB	*['20]*
DESIGN	▪ Developed proficiency in using Adobe Illustrator as part of the **Design Bootcamp** held by Career Cell, IITB inculcating techniques as well as general design aesthetics ▪ Incorporated **typography**, **isometric form** and **compounded vector** artwork	*['20]*
TECHNICAL SKILLS	▪ *Programming:* Proficient in C++ and Python, familiar with R, Java and FORTRAN ▪ *Software:* Perseus, AutoDock4 (and Vina), Adobe Illustrator, ChemDraw	

EXTRA CURRICULAR ACTIVITIES

SPORTS	▪ Selected for and trained under the **National Sports Organisation Table Tennis Team, IITB**	*[2019-2020]*
	▪ Successfully **summitted** on 2 **Himalayan** expeditions (**>3500 metres**) in N. Uttarakhand	*[2016,2017]*
	▪ Won **first place** in the intra-hostel Poker Championship within the institute	*[2020]*
MISCELLANEOUS	▪ Won a prize for distinction in the first ever holistic all-India Environmental Olympiad	*['16]*
	▪ Part of a shortlisted team of 4 taking part in the HackReaction Hackathon	*['16]*
	▪ Made it to the regional championships of First Lego League of autonomous robotics	*['12]*