



Kandarp Solanki

Third Year Undergraduate
Engineering Physics
Indian Institute of Technology Bombay

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Incoming Investment Research Analyst at Axis AMC

Interests

Finance, Artificial Intelligence, Machine Learning and Data Analytics

Education

2021-Present	B.Tech in Engineering Physics , Indian Institute of Technology Bombay,	[CPI - 9.12/10]
2021-Present	Minor in Machine Intelligence and Data Science , Centre for Machine Intelligence and Data Science, IIT Bombay,	[CPI - 10/10]
2021	Higher Secondary Education , Bright Day School, Vadodara,	[96.4%]
2019	Senior Secondary Education , Bright Day School, Vadodara,	[98%]

Projects and Internship

Nov 2023 - Jan 2024	Financial Research Intern National Stock Exchange (NSE) of India Guide: Dr. Tirthankar Patnaik, Chief Economist, NSE India <ul style="list-style-type: none">Played a key role in development of methodologies for ongoing projects highlighted in the NSE's monthly Market Pulse publicationAnalysed over 240+ million tick-by-tick data points from FY19-23 FO segment covering stocks and indicesPrepared a brief report on Pre and Post-COVID trading behaviour of retail individuals in FO segmentConducted in-depth analysis of key changes over years and validated the hypothesis of financial illiteracy among new traders
May 2023 - July 2023	Research Intern Centre for Nanoscience and Engineering, IISc Bangalore Guide: Sreetosh Goswami <ul style="list-style-type: none">Worked with a team of 5 scholars working on world-class nanofabrication technologiesDeployed ML models with >90% accuracy to automate MHz frequency prediction in SI5351 moduleExamined fast-data transfer upto 400kbps by configuring SI5351 using Serial Data & Serial Clock linesStudied the memristor-based implementation of Autoencoders used for intrusion and anomaly detection
Spring 2022	Convolutional Network Segmentation using U-Net (Report) Guide: Prof. Biplab Banerjee, Centre for Machine Intelligence and Data Science, IIT Bombay <ul style="list-style-type: none">Extended the idea of U-Net model using symmetric contraction & expanding paths to capture contextsDesigned & trained a deep learning image segmentation model on CARVANA dataset with >98% accuracyImproved the results by ~10% using advanced techniques like data augmentation & batch normalization
Summer 2022	Factors Affecting the Stock Market, Finsearch (Report) Finance Club, IIT Bombay <ul style="list-style-type: none">Studied various types of mergers, acquisitions, insolvencies, bankruptcies: compared & contrastedCarried out multiple case studies like Reliance Communication bankruptcy, acquisitions of MTS India and Digi Cable, Vodafone and Mannesmann, Mindtree's acquisition by L&T, defence strategies, etc.Analyzed the impact on stock market due to these along with long term and short term effects of takeovers

- Autumn 2022 **Cryptocurrency: Analysis, Visualization and Prediction (Report)**
Guide: Prof. Amit Sethi, Department of Electrical Engineering, IIT Bombay
- Cleaned, analysed a cryptocurrency dataset with **10+** cryptos spanning over **7** years using **Pandas** library
 - Examined **correlation** between various cryptocurrencies & studied influence of financial markets on them
 - Built machine learning models based on **Recurrent Neural Networks (RNN)** using **Keras LSTM** model, trained them with the dataset and accurately predicted prices of 3 major cryptocurrencies, **Bitcoin, Ethereum & Litecoin**
- Autumn 2022 **Dependence of parameters on charge asymmetry in p-p collisions at 13 TeV (Repository)**
Guide: Prof. Sadhana Dash, Department of Physics, IIT Bombay
- **Statistically analyzed datasets** generated by the **Pythia 8 Monte Carlo** simulator using the **ROOT** software containing fluctuations of **2 million+** charged particle multiplicities in **proton-proton collisions**
 - Checked the dependence of parameters like charge particle multiplicity distribution and kinematic variables
 - Studied the distribution of **charge asymmetry in different multiplicity classes** to observe trends in standard deviation and analysed the multiplicity distribution in charge symmetric and asymmetric regions
- Feb 2023 - **Advisor | INPhO, OCSC, PDC**
Present Homi Bhabha Centre for Science Education, Tata Institute of Fundamental Research, Mumbai
- Involved in selection of a team of 5 representing India at IPhO 2023, who bagged 3 gold and 2 silver medals
 - Reviewed answer scripts of **100+** applicants nationwide for **Indian National Physics Olympiad (INPhO)**
 - Contributed to student shortlisting for **OCSC** camp and question paper preparation, selecting **35** students
 - Developed highly challenging problems with **model solutions** for the **Indian team** participating in the **International Physics Olympiad (IPhO) 2023, Tokyo, Japan**, during the Pre-Departure Camp (**PDC**)
- Winter 2022 **Market Research Intern & Web Developer**
AgroEdge Pvt. Ltd.
- Developed a website from the ground up for a catering service that would serve **10K+** customers/year
 - Formulated **research documents** catering to need of commercial production of edible mushrooms
 - Extensively studied the process of cultivating gourmet mushrooms and viability of their cultivation in India

Training and Workshops

- Dec 2023 **24th International Capital Markets Conference**
National Institute of Securities Markets, Nagothane
- Networked with industry leaders and professionals, gaining insights into Securities Markets, Governance, Instruments, and Regulations for Sustainable Development.
 - Interacted with prominent leaders on cutting-edge topics in the finance industry, enhancing my understanding of market dynamics and regulatory frameworks for sustainable development
- Winter 2022 **National Initiative on Undergraduate Sciences (NIUS)**
HBCSE-TIFR, Mankhurd, Mumbai
- Attended week-long series of lectures by eminent Indian professors on frontline physics research topics, like **low energy n-n scattering, quantum entanglement, morphological analysis of thin films, etc.**
 - Worked on multiple meticulous experimental lab problems at **HBCSE, Mankhurd** based on optics, electromagnetism, and electronics, **rigorously analysed** the results and **received a felicitation certificate**

Academic Achievements

- 2023 **Ranked 8th** out of 62 junior undergraduates in IIT Bombay's Engineering Physics batch of 2025
- 2023 One of 2 nominated for **AUA-THU Global Summer School** held at Tsinghua University, China
- 2023 Conferred with the highest grade **AP** for academic excellence in the course **DS303 - Introduction to Machine Learning**, given to only **1** out of **173** students
- 2021 Secured **99.78 %ile** in Joint Entrance Examination (**JEE**) **Mains** out of **~1 million** candidates
- 2021 Secured **AIR 989** out of **0.14 million** candidates in Joint Entrance Examination (**JEE**) **Advanced**
- 2021 Selected to participate in **National Initiative in Undergraduate Science (NIUS)** program by **Tata Institute of Fundamental Research (TIFR)**, Mumbai (only **65** selections nationwide)
- 2021 Secured **State Rank 75** of 1 lakh+ candidates in **Gujarat Common Entrance Test (GUJCET)**
- 2019 Awarded **Certificate of Merit** in 2 subjects given to **top 0.1%** meritorious students in **Class X** by **CBSE**

Positions of Responsibility

- March 2023 - **Teaching Assistant | Department of Physics, Department of Mathematics, IIT Bombay**
June 2023 *PH111 (Classical Mechanics), PH112 (Quantum Mechanics), MA108 (Differential Equations), PH221 (Analog Electronics Lab)*
- Conducted interactive weekly problem-solving tutorial sessions for **40+** first year undergraduate students
 - Hosted a **Tutorial Service Centre (TSC)** session for the course PH111 witnessing **100+** undergraduates
 - Curated a comprehensive list of exam-preparation resources for quick revision used by **60+** students monthly
- May 2023 - **Joint Secretary**
Present *Students' Association of Physics Department, IIT Bombay*
- Elected representative of **250+** UG students, managing a budget of **INR 1 lac+** for department events
 - Planned an annual calendar executing **10+** events in sports, cultural, etc catering to **500+** people
 - Collaborated on external client liaison, facilitating departmental trips and industrial visits with stakeholders
- May 2022 - **Institute Sports Convener**
May 2023 *Institute Sports Council, IIT Bombay*
- Appointed as convener out of **250+** applicants through an extensive assignments and interviews
 - Ideated & executed the General Championship opening ceremony which saw an attendance of **500+** people
 - Currently working on the **Sports App** using **Angular** for front-end and **NodeJS** for back-end which will cater to all the updates related to Inter-IIT, Aavhan, General Championships, and all other sports activities
- May 2022 - **Aavhan Coordinator**
May 2023 *Institute Sports Council, IIT Bombay*
- **Coordinated** and **ideated** multiple events organised under **Aavhan 2022** - IITB's Sport Festival
 - Collaborated with **Decathlon** to promote sports activities and fitness culture within the institute
 - Ideated and executed the **Aavhan-Half Marathon** catering to **5K+** people

Key Courses Taken

- Physics** Special Theory of Relativity, Photonics, Thermal Physics, Quantum Mechanics I & II
- Mathematics** Linear Algebra, Complex Analysis, Ordinary and Partial Differential Equations, Numerical Analysis
- Minor** Data Analysis & Interpretation, Programming for Data Science, Introduction to Machine Learning
- Online** Machine Learning by Andrew Ng, Finance for Non-Finance Professionals by RICE University

Technical Skills

- Languages C++, PYTHON, R, FORTRAN, HTML, CSS, JS, SQL, BOOTSTRAP, ROOT
- Data Science NUMPY, PANDAS, MATPLOTLIB, SEABORN, MATLAB, GNU OCTAVE
- Softwares LTSPICE, MSOFFICE, CANVA

Extracurriculars

- Self published book on **Gumroad** with sales **>10K INR** on how to learn CSS smartly '21
- Attended a 2-day workshop & implemented some hands on projects on tinkercad.com '22
- Competed in **Google Kickstart** & coded efficient algorithms to complex problems '21
- Completed a yearlong training program in National Sports Organization (**NSO**) Cricket '22
- Participated and **won** the Aavhan's Revive Sports League (**RSL**) in Cricket out of **6** teams '22
- Learnt the basics of playing a guitar organized by Symphony, IITB's Music Club '22
- Part of the team of 45 selected by trials for **Inter-IIT Camp** for **Cricket** '22