Scholastic Achievements

- Cleared **Financial Risk Management (FRM)** level 1 exam with a **1111** quartile in all subjects. *(2024)*
- Secured **99.17** percentile in **JEE Advance** examination amongst **0.16 million** candidates. *(2022)*
- Secured **99.83** percentile in **JEE Mains** examination amongst **1.02 million** candidates. *(2022)*
- Awarded the **KVPY** fellowship bagging the rank **532** in SX category and **588** in SA category. *(2020-22)*

Professional Experience

Software developer| Road PCI | ZP Ratnagiri, Govt of Maharashtra *(Feb'24-Present)*

- Designed a **signal processing pipeline** invovling **Bernstein Polynomial** resampling, **Eulerian and PCI** reorientation, **butterworth low pass filters** followed by prediction using **65%** random forest model
- Developed and deployed a **PostgreSQL** database and **Flask** backend on an **Amazon EC2** instance, configured with **nginx** & **gunicorn**. Also created an **admin dashboard** to monitor collected road data.

Project Manager | ProSpace *(Apr'24-Present)*

- Managed over **10 projects** across diverse domains like **Finance**, **ML**, and **Database Management**.
- ***BP Wealth***: Headed a team of **5** quantitative researchers **generating alpha** for daily and weekly trading. - Performed statistical analysis of **6** strategies including **triple straddle**, **expanded average spread** etc.
- ***Algobulls***: Designed a dashboard to analyze **trading strategies**, P&L statements and optimize portfolios. - Displayed various ratios and graphs including **equity draw-down curve**, **calmar ratio**, **sortino ratio**.
- ***Mosaic Asset Management***: Perform **top-down analysis** to identify sectors which outperform nifty-50.

Software developer | Indianome | Tata cancer research center & ProSpace *(Nov'23-Jan'24)*

- Developed a **Quality Control pipeline** with **Hail** to process **450+ GB** data, reducing time to **1/10th**.
- Applied **Ensembl variant effect predictor** on **Clinvar & HGVS datasets** for mutation analysis.

Major Projects

Matsya, Autonomous Underwater Vehicle (AUV) *(Jan'23-Present)*

RoboSub, AUVSI & US Office of Naval Research *Guide: Prof. Leena Vachhani, Prof. Hemendra Arya*

- **Finalists** at **RoboSub 2023**, representing **India** among **10+** countries and **50+** teams across the globe.

Software Sub-Division Head *(Apr'24-present)*

- Spearheading a **3-tier**, **11 member** multidisciplinary team for the development of matsya 6D
- Dedicated **300+** hours in extensive testing of our **Python** codebase for RoboSub 2024, which involved enhancing Computer Vision algorithms in **OpenCV** & **YOLOv8** for improved detection accuracy.
- Developed **Classical Vision** based **object detection** algorithms for autonomous tasks in Robosub 24.

Software Developer *(Aug'23-Apr'24)*

- Led the **upgrade** of our software stack from **ROS** to **ROS2**, involving careful migration planning.
- Revamped the **acoustics package** by designing a **new architecture** to ensure optimal performance.
- Designed a tool for **image annotation** and **color calibration** to aid **YOLOv8** training and color tuning.
- Designed a **TDoA algorithm** for accurate underwater pinger localization with three hydrophones.

Other Projects

Portfolio Optimization using Genetic Algorithm | Self Project *(Nov'23 - Dec'23)*

- Performed portfolio optimization using a genetic algorithm with the **Sharpe ratio** as the fitness function.
- A **heuristic crossover** was used to create new generations of chromosomes in the genetic algorithm.

Extracurriculars

- Chosen for **Raising a Mathematicians Training Program** from over **5000** applicants. *(2019)*
- Bagged **Third position** in Math Wiz Contest at the **8th International Young Mathematicians Convention** (IYMC) conducted by **City Montessori School**, Lucknow among **18+** participating Countries. *(2018)*