

Aarav Shah

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EDUCATION

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| <ul style="list-style-type: none">• Birla Institute of Technology and Science, Pilani, Rajasthan<ul style="list-style-type: none">– Masters of Science in Physics (Honours)– Pursuing a Bachelors of Engineering in Mathematics & Computing– CGPA: 9.32• Prakash College of Commerce & Sciences, Mumbai, Maharashtra<ul style="list-style-type: none">– Specialisation in the Science Stream, focusing on <i>PCM</i>• Ryan International School (ICSE), Mumbai, Maharashtra | <i>2023 - Present</i>
<i>2021 - 2023</i>
<i>2008 - 2021</i> |
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INTERNSHIPS/EXPERIENCE

Data Analyst, AVAADA Energy Ltd *Oct 2025 - Nov 2025*
Worked on the company's energy data to analyse the factors influencing Global Horizontal Irradiance (GHI) values under Prof. Pabitra Biswas, who specialises in Data Analytics & Statistical Inference.

- Pre-processed and formatted the raw sensor data for subsequent analysis and modelling, ensuring uniformity, compatibility and structural integrity for specialised analytical tools.
- Developed comprehensive data releases spanning five different timeframes (1m, 5m, 15m, 30m & 1h) to enable in-depth, multi-level analysis of changing solar patterns with varying depths.
- Empirically tested a predictive hypothesis on real-world data to determine the influence of various environmental factors on the Global Horizontal Irradiance (GHI) Values.

Undergraduate Researcher, BITS Pilani *Jul 2025 - Present*
Conducting research under Prof. Sumanta Pasari to understand the ***Socio-Economic Impact of Renewable Energy on Rural India*** to help improve Solar Adaptability in the country.

- Performed advanced multivariate statistical techniques, including Factor and Cluster Analysis, to categorise respondents into Positive, Neutral, and Negative socio-economic impact groups.
- Systematically tested and validated combinations of derived clusters to identify which specific Economic factors most significantly influenced each categorised respondent group.
- Developed targeted, data-driven policy change suggestions and interventions aimed at shifting the identified Neutral and Negative populations toward the favourable Positive impact categories.

Student Faculty Committee, Physics Department, BITS Pilani *Jul 2025 - Present*
Served as the primary liaison, fostering two-way communication between the Student body and Department Faculty, and translating student feedback into actionable departmental initiatives.

- Bridged communication and served as the primary liaison between students and the faculty, ensuring transparent feedback and proactively addressing Departmental operational concerns.
- Facilitated measurable academic improvement by gathering & presenting detailed student feedback on curriculum structure and teaching quality directly to Department heads for review.
- Coordinated key departmental initiatives and large-scale academic events, significantly promoting student engagement and actively assisting faculty with new policy implementation.

Research Intern, National Centre for Polar & Oceanic Research *May 2025 - Jul 2025*
Conducted a ***Study of Long-Term Variability of Ocean Sea Level and Currents in the Bay of Bengal*** under the guidance of Dr. Arnab Mukherjee & publishing at the Library (NCPOR).

- Generated and predicted Wind Patterns for 2008-2021 using a linear model trained on satellite data from 2000-2007 by using NetCDF & Python in a terminal-based interface.
- Conducted a rigorous analysis to quantify and provide appropriate reasoning for discrepancies observed between numerical model predictions and actual satellite-derived wind data.
- Documented & Published the final document to the NCPOB Library. View at ([Link](#)).

TECHNICAL SKILLS

- **Programming Languages:** Python, Java, C, C++ (*Learning*), JavaScript, NetCDF, GNU, Latex.
- **Frameworks:** Shell Scripting, Jupyter, Postman - API, Django, Flask, Conda, CI/CD.
- **Tools/Environment:** Git, VS Code, MySQL (*Learning*), Docker (*Learning*), AutoCAD, Overleaf.
- **Others:** CodeForces: Pupil (1200), Data Structures, OOP, Linux, LeetCode.

RELEVANT COURSEWORK

- **Completed Courses:** Thermodynamics; Integral Calculus (M1); Probability & Statistics; Differential Calculus (M3); **Classical Mechanics**; Electro-Magnetic Theory; **Optics**; Quantum Information & Computing; **Quantum Mechanics - 1**; Mathematical Methods of Physics; Theory of Relativity.
- **Ongoing/Upcoming Courses (To be Completed by May 2026):** Quantum Mechanics -II; Statistical Mechanics; Solid State Physics; Atomic & Molecular Physics; Nuclear & Particle Physics.

PERSONAL PROJECTS

GitHub Scraper

Nov 2025 - Present

Developed a **custom web scraping** tool to efficiently extract and summarise repository data and documentation (README files) for automated analysis and portfolio review.

- Designed and engineered a **Python scraping utility** utilising the `requests` and `BeautifulSoup` libraries to efficiently iterate through all public repository pagination on a target GitHub profile.
- Implemented robust **error handling, recursive calls, and version control checks** to fetch raw `README.md` content from both `main` and `master` branches for all discovered repositories.
- Structured and exported all scraped data, including names, URLs, and documentation content, into a clean, context-rich `MD` file suitable for large-scale **LLM analysis and summarisation**.

MineAware

Sep 2025 - Present

Ongoing *Smart India Hackathon Project* where we are developing a CV system to enhance Mine operational safety by monitoring *Personal Protective Equipment (PPE)* compliance in real-time.

- Developing & deploying **Computer Vision model** to be trained to instantly verify that all workers are wearing proper **Personal Protective Equipment (PPE)** upon zone entry & exit.
- Implementing a **database logging mechanisms** and time-stamping to track the entry & exit of every worker, maintaining a record for both **site security and operational accountability**.
- Collaborating cross-functionally with the team to engineer a comprehensive solution for real-time safety, specifically designed for **harsh, geographically-challenging mining environments**.

BITS WIFI Login

May 2025 - Present

A College WIFI Login App developed to bypass the repetitive manual login process for Uni Networks.

- Engineered a Python script using the `requests` library, configured to **handle dynamic network redirects** and manage sessions by submitting encrypted user credentials via a POST request.
- Developed & compiled an Automator Application (*v3.0*) specifically for **macOS users**, allowing convenient one-click execution and successfully eliminating the reliance on *CLI* usage.
- Configured advanced, persistent automation features across platforms using native macOS `launchd` agents to ensure **permanent, autonomous system execution** at a reliable 1-hour interval.

PERSONAL CERTIFICATIONS

- Data Analysis with Python, *FreeCodeCamp* *Aug 2025*
- Introduction to Shell Scripting, *CodeSignal* *Aug 2025*
- Postman API Fundamentals Student Expert, *Postman* *Mar 2025*

LANGUAGES

- English - Native/Bilingual Proficiency
- Hindi - Native/Bilingual Proficiency
- French - Beginner Proficiency