Aarav Shah

Mobile | Personal Email | University Email | Website | Linked-In | GitHub

EDUCATION

- **Birla Institute of Technology and Science**, Pilani, Rajasthan   *2023 - Present*
  - Master of Science in Physics (Honours).
  - Pursuing a Bachelor of Engineering in **Mathematics & Computing**.
  - CGPA: 9.32
- **Prakash College of Commerce & Sciences**, Mumbai, Maharashtra   *2021 - 2023*
  - Specialization in the Science Stream, focusing on *PCM*.
- **Ryan International School (ICSE)**, Mumbai, Maharashtra   *2008 - 2021*

INTERNSHIPS/EXPERIENCE

Data Analyst, AVAADA Energy Ltd   *Oct 2025 - Nov 2025*

Worked on the company's energy generation data to analyze factors influencing Global Horizontal Irradiance (GHI) values under Prof. Pabitra Biswas.

- **Pre-processed and formatted data** for analysis, ensuring compatibility with analytical tools and models.
- Created data **rollouts** for multiple time intervals (1m, 5m, 15m, 30m, & 1h) to facilitate granular analysis of trends.
- Tested a professor-provided hypothesis on actual data to **determine the influence of various factors on the 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***.

- Performed Factor and Cluster Analysis to **categorize respondents** into Positive, Neutral, and Negative socio-economic impact groups.
- Tested combinations of clusters to **identify which Economic factors most influenced each category** of respondents.
- Developed **policy change suggestions** aimed at shifting people from the Neutral and Negative categories into more Positive ones.

Student Faculty Committee, Physics Department, BITS Pilani   *Jul 2025 - Present*

Served as a direct bridge, fostering communication between the students of the Physics Department and the Faculty.

- **Bridged communication** between students & faculty, ensuring direct feedback and addressing Departmental concerns.
- **Facilitated academic improvement** by gathering and presenting consolidated student feedback on curriculum and teaching quality to the department heads.
- **Coordinated departmental initiatives** and events, promoting student engagement and assisting faculty with policy implementation.

Research Intern, National Centre for Polar & Oceanic Research (NCPOR)   *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.

- **Generated and predicted Wind Patterns** for 2008-2021 using a linear model trained on satellite data from 2000-2007.
- Analyzed and provided appropriate reasoning for discrepancies observed between the predicted and observed (satellite) wind data.
- **Documented & published the final document at the NCPOR Library** (Link).

TECHNICAL SKILLS

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

Relevant Coursework

- **Completed Courses:** Thermodynamics; Mechanics, Oscillations & Waves; Integral Calculus (M1); Linear Algebra (M2); Probability & Statistics; Differential Equations (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; Computational Physics; Solid State Physics; Atomic & Molecular Physics; Nuclear & Particle Physics; Stochastic Calculus.

Personal Projects

GitHub Scraper   *Nov 2025 - Present*

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

- Designed a Python script utilizing `requests` and `BeautifulSoup` to iterate through all public repository pagination pages on a GitHub profile.
- Implemented robust error handling and recursive calls to fetch raw `README.md` content from both `main` and `master` branches for all discovered repositories.
- Structured and exported all scraped repository names, URLs, and documentation into a context-rich Markdown file suitable for external **LLM analysis.**

MineAware   *Sep 2025 - Present*

An ongoing Computer Vision project for the ***Smart India Hackathon***, focused on enhancing the safety of **Coal Mine Workers** in India.

- Developed Computer Vision models to verify that mine workers are wearing **proper safety equipment** upon entry and exit.
- Implemented logging mechanisms to track the entry and exit of workers, maintaining a detailed record for **security and accountability**.
- Collaborating with colleagues to create a comprehensive solution for real-time safety monitoring in harsh mining environments.

BITS WIFI Login   *May 2025 - Present*

A College WIFI Login Automator developed using Python to bypass the repetitive manual login process for the BITS Pilani network.

- Engineered a Python script utilizing the `requests` library to **securely handle dynamic network redirects** and submit user credentials via POST request.
- Created an Automator Application (*v3.0*) for **macOS users**, allowing one-click execution and eliminating the need for command-line interface usage.
- Configured advanced automation features using macOS `launchd` agents and Linux `systemd-timer` for **permanent system execution** every 3,600 seconds.

Personal Certifications

- Data Analysis with Python, *FreeCodeCamp*   *Aug 2025*
- Introduction to Shell Scripting, *CodeSignal*   *Aug 2025*
- Java Fundamentals, *Coddy Tech*   *Aug 2025*
- Postman API Fundamentals Student Expert, *Postman*   *Mar 2025*
- Crash Course on Python, *EDX*   *Jul 2023*
- Getting started with AI Agents, *SuperAGI*   *Jul 2023*

Languages

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