Shivrajsinh Bhosale

Senior Undergraduate

Dual Majors in Artificial Intelligence and Chemical Engineering

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ACADEMIC DETAILS

Degree	Specialization	Institute	Year	CPI/%
B.Tech.	*AI and Chemical Engineering*	IIT Gandhinagar	2022-Present	8.09
Class XII	*Physics, Chemistry, Maths*	Dr. V.G.Paranjape, Rahimatpur	2021-2022	88.33
Class X		Podar International School, Satara	2019-2020	95.2

PROJECTS

- **FedEx | Optimal Cargo Management for Flights | Inter IIT-Tech Meet 13.0** | *Project Link* [Dec' 24]
  - Implemented various approaches using heuristics to develop the **Sequential Genetic Algorithm combined with the Deepest-Bottom-Left Algorithm** to optimize the packing of Unit Load Devices (ULDs).
  - Designed a series of algorithms to maximize **volumetric efficiency** while minimizing the **total cost of packaging**.
  - Achieved a **cost reduction** by effectively finding the optimal sequence of packages to be packed in ULDs.

- **Real Time Human Activity Classifier using Accelerometer Data** | *Prof. Nipun Batra* | *Project Link* [July '25 – Aug '25]
  - Conducted **Exploratory Data Analysis (EDA)** and visualized activity classes using **Principal Component Analysis (PCA)** to reduce dimensionality and identify patterns in accelerometer data.
  - Trained **Decision Tree models** on raw and featurized data using **TSFEL** and **UCI-HAR features**; evaluated performance through accuracy, precision, recall, and confusion matrix across multiple approaches.

- **MLP Implementation & Experiment Tracking (Iris Dataset)** | *Project Link* [Apr '25]
  - Trained a **Multi-Layer Perceptron (MLP)** on the **Iris** dataset using **scikit-learn** and tracked experiments with **W&B**.
  - Visualized loss/metrics in **Matplotlib**, and performed hyperparameter tuning via **Grid**, **Random**, **Bayesian**, and **Hyperband** search; benchmarked configs using **accuracy**, **F1-score**, and confusion matrices.

- **Cloud Containerization and Microservices with Docker on GCP** | *Project Link* [March '25 – April '25]
  - Developed **FastAPI**-based frontend and backend apps in **Docker** communicating with **Elasticsearch** container.
  - Configured inter-container **networking** and **volumes** for persistent data even after container deletion or restart.
  - Automated builds via **Dockerfiles** and deployed public images on **Docker Hub**.

INTERNSHIPS AND RESEARCH EXPERIENCE

- **Summer Research Intern | Smart Energy & Thermal Transport Lab, IIT Gandhinagar** | *Project Link* [May '24 - July '24]
  - Synthesized TiB_2, Fullerene, and Copper Oxide nanosheets using advanced methods for industrial applications, effectively optimizing thermal performance across diverse voltage conditions.
  - Conducted a comprehensive **comparative analysis** between **bare copper and coated copper** through **18 experimental runs** to identify key differences, enhancing applications and improving performance in varied conditions.

- **Hillslope Evolution Modeling** | *Prof. Rishi Singh* | *Project Link* [Jan '25 – April '25]
  - Trained a **PINN** to model 1D hillslope diffusion using initial and boundary conditions.
  - Achieved MSEs of **0.016** on synthetic data and **0.068** on Aravalli data, validated with analytical solution.
  - Used a **composite loss** enforcing physics and boundary conditions for **consistent learning**.

TECHNICAL SKILLS

- **Certifications:** NISM Series XV: Research Analyst :An official **test-based certification** conducted by the National Institute of Securities Markets **(NISM)** under the Securities and Exchange Board of India **(SEBI)**.
- **Programming Languages:** Python(NumPy, Pandas, PuLP, Scikit-learn, Matplotlib), C++, HTML, CSS, LaTeX, SQL.
- **Tools:** Power BI, Verilog Vivado, Arduino, Autodesk Inventor Professional, Keysight BenchVue, MATLAB, Ansys.

ACHIEVEMENTS

- Received the prestigious scholarship of **National Talent Search (among top 0.2% students all over India)**. [AY 2021]
- Secured Sushila Prabha and Satish Singla merit scholarship for exceptional **all-round performance**. [AY 2024]
- Qualified for the **Regional Mathematics Olympiad (RMO)** exam during junior high school years. [AY 2019]

POSITIONS OF RESPONSIBILITY

- **Senior Executive Tech Expo Member** (Amalthea'23 Technical Summit IITGN) [Dec '22 - Nov '23]
  - Collaborated with **tech companies'** industrialists, academicians, and HRs for the Technical Summit of IITGN.
  - Organized a large-scale **technical exhibition** by hosting **twenty-two companies** across different sectors.
- **Event Lead** (Blithchron'24 (Cultural Fest), IITGN) [Aug '23 - March '24]
  - Responsible for leading a team of 20 people, hosting the StreetBeat(solo impromptu dance battle) event.
  - Successfully organized, planned, and executed the event with an attendance of **two thousand** people for D-day.

RELEVANT COURSES

- Data Structures and Algorithms, Software Tools and Techniques for AI, Machine Learning, Probability, Statistics, and Data Visualization, Data-Centric-Computing, Theory of Computation, Linear Algebra, and Engineering Optimization.

EXTRA-CURRICULAR ACTIVITIES

- Secured third place in the **National Level Roller Skating** competition under the age of fourteen held at Indore.
- Represented IIT Gandhinagar at **Inter-IIT Cultural Meet(5.0)** held at **IIT Madras** in group dance and street battle events.