SHAH MOHAMMAD

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Education

Indian Institute of Technology Patna **Patna, India**
Bachelor of Technology. *Nov 2022 - May 2026*

Work Experience

AfterQuery (YC)
Software Engineer (Linux/Bash) *Sept 2025 – Present*
- Designed and authored realistic **Terminal-Bench–style tasks** for training and evaluating frontier **Large Language Models (LLMs)** on real-world Linux, DevOps, and data-engineering workflows.
- Created **multi-step, terminal-based debugging environments** (using **Bash**, **Python**, and **Docker**) to simulate production-grade troubleshooting, system repair, and **CI/CD** diagnostics for autonomous agent learning.
- Ensured high-quality dataset standards—precise **behavior-to-test mapping**, reproducible outputs, pinned dependencies, and anti-cheating measures to improve **LLM** reasoning robustness and generalization.

Muzaffarpur Smart City Limited. **Muzaffarpur ICCC, India**
Software Developer Intern *June 2025 - July 2025*
- Designed and implemented a scalable **ERP platform** to automate **staff movement tracking** and **inventory control** for **1,600+ municipal workers** across **49 wards** and **10 administrative circles**.
- Built an inventory-management module with stock-in/out logs, approval workflows, real-time alerts, and analytics dashboards–cutting stock discrepancies by **40%** (**React**).
- Engineered RESTful APIs using **Django REST Framework**, **PostgreSQL**; crafted a responsive **React** frontend.

Analyzing RBI Communication and Market Impact **IIT Patna, India**
Under Asst. Professor Rajendra NP (Live Website) *May 2025 - July 2025*
- Implemented a modular **React** frontend in **TypeScript** and **Tailwind CSS**, integrated with **Django REST** API endpoints to deliver a responsive and maintainable UI.
- Designed interactive research tools-**word clouds**, **MPC voting trend charts**, and **macroeconomic correlation visuals**-using **Recharts** to turn raw policy data into actionable insights.
- Containerized services with **Docker** and deployed backend/database on **Render** and frontend on **Vercel**-optimizing cost and deployment velocity.

Outlier.AI **Remote, San Francisco, CA**
AI Model Trainer – RLHF (Reinforcement Learning from Human Feedback) *February 2025 - April 2025*
- Collaborated with team to fine-tune large language models (LLMs) using **Reinforcement Learning from Human Feedback (RLHF)**, optimizing performance on mathematically intensive tasks.
- Engineered high-quality training datasets and annotated complex problem-solving workflows in **LaTeX**, improving model accuracy and step-wise reasoning.
- Analyzed and validated model completions using human-in-the-loop evaluation; contributed to iterative reinforcement cycles by auditing and refining reward models.
- Collaborated with ML research and engineering teams to enhance prompt engineering techniques and RLHF pipelines for STEM applications.
- Gained industrial exposure to: **LaTeX, C++, Mathematics, STEM** domains.

Projects

Digital Twin–based Fault Diagnosis for Wind Turbines—Deep Learning Project
(Under the guidance of Dr. Somnath Sarangi and Dr. Arjit Mondal, IIT Patna) *July 2025 - Present*
- Designed **AdasTNet**, a 1D CNN + AdaIN style-transfer framework to align simulated and real vibration signals, addressing data scarcity in fault diagnosis and improving model generalization.
- Achieved >90% accuracy with $\sim10\times$ lower GPU memory than GAN baselines, enabling deployment on resource-constrained edge devices.
- Implemented dual-loss training with Adam and AMP, converging within ~2000 iterations.

Stock Portfolio Dashboard   [GitHub](#)

- Built an end-to-end Stock Portfolio Dashboard with **React (TypeScript)** frontend and **Spring Boot** backend; implemented portfolio CRUD, live **P&L** computation, and a responsive **Top Stocks**.
- Integrated market data via the **Tiingo API** with a **6-hour** scheduled refresh and server-side caching to respect rate limits while keeping the UI responsive and up to date.
- Containerized the stack with **Docker Compose** (**frontend**, **backend**, **MySQL**) enabling one-command local setup and reproducible development environments.

Accomplishments

- Attained **Global Rank 504** out of **27,000+** participants in Codeforces Round 1049 (Div. 2)
- Secured **Global Rank 585** among **29,000+** participants in Codeforces Round 1046 (Div. 2).
- **Expert** at Codeforces with a max rating of **1686** [**Profile Link**].
- **National Semi-Finalist**, Flipkart **GRiD 7.0** - selected from **4.5 lakh+** participants   Aug 2025 [Certificate]
- Secured **Global Rank 88** out of 31,000+ participants in LeetCode Weekly Contest 463 (**Contest Link**).
- Reached **Knight** level on LeetCode with a maximum rating of **1859** (Top 5.5% globally).
- Scored in the **top 10%** in **JEE Advanced 2022** (12,000 out of 170,000+ candidates).

Skills/Relevant Coursework

- **Programming Language:** C++, Python, Java
- **Relevant Coursework:** Data Structures & Algorithms, OOPs, Operating Systems, DBMS, Computer Networks, Foundations of Machine Learning, Data Analytics & Visualization, Financial Analytics, Economics
- **Frameworks & Tools:** ReactJs, Spring Boot, Django, RESTful APIs, GitHub

Positions of Responsibility

- Coordinator, Organizing Team(**Inter IIT Cultural 7.O**)   November 2024 - December 2024
- Coordinator, Training and Placement Cell Patna (**TPC IIT Patna**)   May 2024 - Present
- Coordinator, Sponsorship and Marketing (**Anwesha IIT Patna**)   May 2024 - February 2025