



## EDUCATION

| Year | Degree/Exam           | Institute                    | CGPA/Marks |
|------|-----------------------|------------------------------|------------|
| 2028 | M.TECH Dual Degree 5Y | IIT Kharagpur                | 7.69 / 10  |
| 2022 | Class 12th, CBSE      | Gyanodaya Gurukul, Patna     | 85.8%      |
| 2020 | Class 10th, CBSE      | Nezamia Public School, Patna | 94.6%      |

## INTERNSHIPS

**Research Engineering Internship | IIT (ISM), Dhanbad | Advisor: Prof. Koner Radhakanta [May'26-July'26]**  
• **Architected** a Maskable PPO **Deep Reinforcement Learning** engine to solve NP-Hard mine production scheduling  
• **Modeled** over 75,000 data blocks as **3D Directed Acyclic Graphs** to dynamically enforce geotechnical action masks  
• **Engineered** a robust **FastAPI** and **PyTorch** backend to asynchronously process millions of physical fleet constraints  
• **Built** a **Three.js** platform to visualize 3D schedules, reducing computational runtime from weeks to minutes

## PROJECTS

**KgpOne: Autonomous Academic | Deep Tech Innovation & Entrepreneurship Challenge [June'26]**  
• Architected MCP server tools, eliminating 500 million redundant context tokens annually for a 90-student cohort  
• Built a hybrid **RAG** pipeline combining **Qdrant**, **Neo4j**, and reranking to deliver cited academic responses in 600ms  
• Architected an asynchronous **FastAPI** ingestion system using Celery, **Redis**, and LlamaP ML to parse academic PDFs  
• Designed an **MCP server** exposing academic knowledge tools and metadata-aware **retrieval** directly to **LLM agents**

**Production E-Commerce Platform | End-to-End Retail Solution | Self Project | MySQL, OAuth, Cloudinary [July'26]**  
• Engineered a **context-aware, multi-step authentication** system, triggering 2FA challenges for suspicious logins  
• Engineered an **anonymous session migration** pipeline, preserving 100% of guest cart state after authentication  
• Integrated **Redis** caching to reduce database load and improve wishlist performance under **concurrent access**  
• Self hosted platform on **AWS EC2** utilizing **Docker** and **Coolify** to automate containerized production deployments  
• Implemented idempotent **Razorpay** payment workflow with webhook verification and order status management

**Password Manager Extension | ReactJS, Node.js, PostgreSQL, ReactNative [Jul 25 - Aug 25]**  
• Engineered Zero-Knowledge application using **Argon2id** and **AES-256-GCM** encryption for client data security  
• Implemented tiered envelope encryption using **Web Crypto API** to securely wrap data and minimize raw secrets  
• Architected a timestamp-based sync ensuring cross-client consistency and conflict-free updates using **PostgreSQL**  
• Developed cross-platform availability using React Vite for browser extensions and **React Native** for mobile apps

**Elara | General Championship | Deloitte | IIT Kharagpur [Mar'25 - Apr'26]**  
• Built a robust **Django backend** with **WebSockets** enabling real-time messaging and seamless chat experience  
• Architected ML pipelines using **Isolation Forest** and **SHAP** to detect and explain behavioral employee anomalies  
• Integrated **Mistral AI** for contextual insights and automated generation of comprehensive HR reports  
• Designed interactive **ReactJS** dashboards for employees and HR managers, improving engagement  
**Link : <https://tinyurl.com/amanverma-projects>**

## SKILLS AND EXPERTISE

**Languages:** C/C++, JavaScript, TypeScript, Python, Java, SQL, HTML/CSS  
**Frameworks & Libraries:** React.js, Next.js, Express.js, FastAPI, LangChain, LangGraph, Celery, NumPy, Pandas, C++STL  
**Databases & Tools :** MySQL, MongoDB, Qdrant, Prisma, Mongoose, Alembic, Docker, Git/Github, Husky, AWS

## COURSEWORK INFORMATION

Programming and Data Structures | Probability and Statistics | Linear Algebra | Advanced Calculus | Python for Data Science and Development | Computational Methods and Instrumentation | Economics and Business Studies | Object Oriented Programming | System Design | Data Base Management System | Computer Networks

## POSITIONS OF RESPONSIBILITY

**Technical Team Member | Kshitij | Techno-Management Fest | IIT Kharagpur [Aug'24 - April'25]**  
• Collaborated with technical heads and team members on frontend development for the fest's digital platforms  
• Worked in a deadline-driven environment, strengthening teamwork, communication, and project delivery skills

**General Secretary, Alumni Affairs | Patel Hall [Aug'25 - Mar'26]**  
• Networked with impactful alumni to strengthen alumni relations and facilitate fundraising initiatives for the hall  
• Coordinated event planning, stakeholder communication, and fund management activities for the Hall

## EXTRA CURRICULAR ACTIVITIES

• Played for Patel Hall's basketball team in the Inter-Hall General Championship, demonstrating teamwork and spirit  
• Served as Wing Representative for Student Welfare at MMM Hall of Residence, coordinating student concerns