

Rishikesh Kumar

Full Stack Engineer | Distributed Systems

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Education

University	Degree	Branch	Year
IIT Bombay	M.Tech	IEOR	July 2024 – July 2026
Guru Ghasidas University	B.Tech	CSE	July 2020 – July 2024

Internships

- Full-Stack Developer Intern** | *Vajra Labs, IIT Bombay* | *Powai, Maharashtra* Aug 2025 – Present
- Contributed to **2+ projects**, developing the **frontend of the company website** and a **sandbox-based malware analysis platform**
 - Spearheaded a **3+ member team**, delivering the project on schedule by coordinating tasks and implementing Agile methodologies
- Full-Stack Developer Intern** | *Presear Software Pvt. Ltd.* | *Bilaspur, Chhattisgarh* May 2023 – Jul 2023
- Designed a **full-stack application** using **React.js** and **Django**, following modular and a component-based development practices
 - Led a **2+ member team** to translate client requirements into **production-ready features** and iterative product enhancements
- Web Developer Intern** | *RMgX Technologies* | *Gurugram, Haryana* Jun 2022 - Aug 2022
- Created and integrated **10+** fully responsive pages for the **company website** using **Next.js**, ensuring seamless functionality
 - Collaborated with the **UI/UX team** to translate design mockups into frontend code, ensuring a cohesive and intuitive experience

Projects

- Vajra Sandbox** | *Sanbox based Malware analysis and Threat detection platform* Aug 2025 – Dec 2025
- Launched a malware analysis platform for sample submission and **static, dynamic, and memory analysis** with report generation
 - Engineered a scalable system with **sandboxed multi-VM execution** and **asynchronous task pipeline** for high-throughput analysis
 - Prepared software using **Python, Django/DRF, and Next.js/TypeScript** with **JWT auth, TOTP 2FA, CAPTCHA, and rate limiting**
- VersatAI Lab Website** | *Content Management Platform* Dec 2025 – Present
- Created a platform to showcase research activities, student profiles, projects and events with collaboration and feedback system.
 - Built the **full-stack system** using **Django/DRF** to deliver secure REST APIs and **Next.js** to power an **SSR/SSG-based frontend UI**
 - Implemented **JWT-based authentication, TOTP-based 2FA, equation based CAPTCHA protection, and role-based access control**
- Sorting and Pathfinding Visualizers** | *Educational Algorithm Visualization Tool* Dec 2022 - Jan 2023
- Built interactive **Sorting and Pathfinding Visualizers** to demonstrate algorithm behavior through **real-time algorithm execution**
 - Developed using **HTML, CSS, and JS**, applying **OOP principles, data structures, and graph algorithms** to create an interface

MTP Thesis & Seminar

- Parameter Specific Literature Retrieval** | *Master's Thesis Project (MTP)* | *Prof. Balamurugan Palaniappan* July 2025 - Nov 2025
- Streamlined a **biomedical literature retrieval pipeline** to search PubMed data and extract **parameter-specific** clinical evidences
 - Improved **entity extraction F1-score to 90%** by fine-tuning a **PubMedBERT-based NER model** on a manually annotated dataset
 - Converted unstructured NER output into structured XML using a **BART-based Seq2Tree model**, for parameter range extraction
 - Implemented a **distributed ML pipeline** with **Ray, PyTorch, and HuggingFace Transformers**; deployed it with **Next.js/FastAPI**
- Multimodal Transformer Architecture and Optimization** | *Seminar* | *Professor Urban Larsson* Jan 2025 - Apr 2025
- Implemented the **Attention is All You Need** paper in PyTorch and presented an in-depth analysis of the paper during the seminar
 - Analyzed in-depth concepts of **An Image is Worth 16x16 Words** and presented how to use images in **transformer architecture**
 - Conducted a seminar presentation on the research behind the **LoRA** paper and discussed about its advantages and disadvantages

Position of Responsibility

- Teaching Assistant** | *IE 643, Deep Learning – Theory and Practice* July 2025 - Nov 2025
- Organized and led **weekly programming sessions** to reinforce core concepts and enhance **practical skills** in DL for **80+ students**
 - Managed and **graded** student copies and projects, providing detailed **feedback** to improve their understanding of complex topics
 - Facilitated **project planning** for the student teams and conducted **regular doubt sessions** ensuring project success and completion
- Website Coordinator** | *IEOR Day, IIT Bombay* Jan 2025 - Mar 2025
- Organised and Coordinated** the annual **IEOR Day** with a **team of 30+ members** to enhance event visibility and resource access
 - Developed and maintained the **event's official website**, providing attendees with event's schedules, announcements and updates

Technical Skills

- Languages:** Python, C, C++, JavaScript, SQL, HTML, CSS, Java, Lua, TypeScript
- Frameworks & Libraries:** Django, DRF, React.js, Next.js, Node.js, Tailwind CSS, HuggingFace Transformers, PyTorch
- Systems & Tools:** PostgreSQL, Redis, Docker, Docker Compose, Git, RabbitMQ, Celery, Ray, WebSockets, Linux, REST APIs

Achievements

- Achieved **99.30 percentile (2024)** and **99.13 percentile (2023)** in GATE CSE, demonstrating strong foundations and expertise
- Secured **World Rank of 32 in CodeChef Starters 42**, showcasing strong proficiency in **Competitive DSA skills**
- Secure **Rank 1 in HackForCG Hackathon** by developing an **ML-based computer vision solution** using **OpenCV** and **Haar Cascade**