

# Rishikesh Kumar

ML Engineer | Data Scientist

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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

**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

**Explainable Depression Detection from Social Media** | Course Project : DL NLP | Pushpak Bhattacharya Aug 2025 – Nov 2025

- Built an **NLP pipeline for depression detection** from social media posts, using **double domain-adaptation** and **guided masking**
- Designed an **explainability pipeline** by combining **Integrated Gradients** with **LLM-based teacher-student distillation method**
- Achieved a **F1 score of 0.7778** on test data, and extracted top-k words contributing most strongly to positive depression detection

**HeadBall2 Game Player** | Seft Project | Real-Time Mobile Game Automation Feb 2025 - March 2025

- Developed a **real-time computer vision pipeline** for mobile game automation using **OpenCV**, from live video streams at **30 FPS**
- Designed an **reinforcement learning system** with a **WebSocket-based** client-server communication, enabling a latency of 50ms
- Built a **mobile automation framework** integrating **ADB, v4l2 and Python**, ensuring reliable device control and streaming screen

## Research & Publication

**Classification of Plant Diseases using SOTA Deep learning Algorithms** July 2024

*International Journal of Computing* | DOI: 10.47839/ijc.23.4.3542

- Implemented and evaluated multiple **CNN architectures** on a very large-scale dataset of 87,900+ leaf images across 38 classes
- Achieved up to **99.62% training and 97.31% validation accuracy**, showing robust generalization across multiple plant diseases.

## 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:** HuggingFace Transformers, PyTorch, Scikit-Learn, Django, React.js, Tailwind CSS
- 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**