

Bharat Kaurav

B.Tech - Computer Science and Engineering

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EDUCATION

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Degree/Certificate	Institute/Board	CGPA/Percentage	Year
B.Tech. CSE	Indian Institute of Technology Indore	8.36 (Current)	2022-Present

SUMMARY

Computer Vision & Diffusion Model Specialist | CS student at IIT Indore with professional experience at unstudio.ai & Styldod Inc. Enhanced diffusion model inference speed by 50% without quality loss and achieved SOTA classification accuracy (96%) through novel architecture designs in flood image classification through social media images. Active open-source contributor specializing in LoRA fine-tuning, latent diffusion systems, and multi-modal AI applications.

EXPERIENCE

- Machine Learning Engineer** Nov. 2024 - Apr. 2025
unstudio.ai / ML Research & Development Gurgaon, India
 - Engineered a product visualization pipeline using **FLUX LoRA**, benefiting **2000+ customers** with improved user experience and image quality
 - Designed **distributed training setup** with Redis, Pub-Sub distributed communication system, error handling, and CI/CD workflows. Currently working on making server-less web app.
- Research Intern** Jul. 2023 - Present
Language and Information Processing Group (LIPG), IIT Indore Indore, India
 - Created a 5000+ image dataset using **DINOv2 and SAM** for automated segmentation mask generation
 - Achieved **SOTA classification accuracy of 96%** using **ECA, SAM, hybrid CNN-Transformer architecture, frequency feature interaction, reverse attention harmonization** and more with **paper currently under review**
- Machine Learning Intern** Jun. 2024 - Oct. 2024
Styldod Inc. / ML Research Team Bangalore, India
 - Enhanced inference speed** of diffusion models by **50%** using Onediffusion, Stablefast, etc. achieving **30% GPU usage reduction**. **Identifying flaws** of their flagship object remover model.
 - Constructed scalable pipeline for gathering images with quality checks and labeling. Tested with **300k images**

TECHNICAL SKILLS

- Computer Vision & Generative AI:** Diffusers, ComfyUI, ControlNet, PEFT, LoRA, OpenCV
- ML Frameworks:** PyTorch, Transformers, BitsandBytes, TRL, DINOv2
- MLOps & Deployment:** Docker, AWS, GitHub CI/CD, FastAPI, Django
- Languages & Web Dev:** Python, C/C++, React, Next.js

PROJECTS

- Dynamic Agentic RAG system** Dec. 2024
13th Inter IIT-Tech Meet, IIT Bombay Github
 - Implemented a Pathway integrated dynamic agentic **RAG** system with **real-time data ingestions, tool calling, custom tool adding/removal feature** etc.
 - Quality tested** with self-curated, high quality legal & finance knowledge intensive data for closed/open source LLMs
- Automatic TikTok Generator** May 2024
Hobby Project Github
 - Assembled video editing pipeline with **AnimateDiff** and **ControlNet**, achieving **50-60s processing** for 5s UHD videos
 - Manually evaluated and tested the results of the pipeline using SOTA (e.g., PSNR) benchmarks
- Behavior Simulation Challenge** Nov. 2023
12th Inter IIT-Tech Meet, IIT Madras Github
 - Developed tweet-like prediction model with **96% accuracy** and **fine-tuned LLaMa** for engagement optimization
 - Operated with huge(**1M+ rows**) amount of data, consisting text, links to image, sound, video etc

Other Projects: Kanji Diffusion Model (LoRA weights); Genetic Algorithm for Slime Volleyball game; LLM Debate system; LLM alignment; Face Recognition Based Attendance System

KEY COURSES TAKEN

- Mathematics:** Linear Algebra and ODE analysis, Complex Analysis, Discrete Maths, Numerical Methods
- Computer Science:** Database and Information Systems, Data Structure and Algorithms, Automata: Theory of Computation, Software Engineering, Operating System, Parallel Computing, System Architecture

ACHIEVEMENTS

- Bronze Medal**, 12th Inter IIT Tech Meet, Adobe's Behaviour Simulation Challenge, IIT Madras 2023
- Gold Medal**, IITI Summer of Code, CyberSecurity category 2023
- All India Rank 1083**, JEE Advanced 2022 among 150k+ students 2022
- All India Rank 5995**, JEE Mains 2022 among 1M+ students 2022
- Top 300 finalist**, India's International Physics Olympiad 2022 delegation 2022
- All India Rank 9**, UCMAS Abacus Competition 2017