



Parshiv Kapoor

UG (III Year I Semester)

B.Tech. (Biosciences and Bioengineering)

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Indian Institute of
Technology
Roorkee



Area of Interest

Machine Learning, Deep Learning

Education

Year	Degree/Examination	Institution/Board	CGPA/Percentage
2024	B.Tech. 2nd Year	Indian Institute of Technology, Roorkee	7.435
2023	Intermediate (Class XII)	Silver Line Prestige School	90.60 %
2021	Matriculate (Class X)	Silver Line Prestige School	94.00 %

Internships

Machine Learning Intern | WhyMinds Global

June 2025 - Present

- Designed and implemented multi-agent systems using autonomously monitor financial regulatory websites
- Extracting key financial incidents, and transforming them into structured, human-quality blog content simulating the behavior of a specialized editorial team.
- Tools Used-CrewAI, Groq API , spaCy, BeautifulSoup, LangGraph

Projects

Credit Card Score Modeling via Classification & Risk Techniques | IIT Roorkee (Finance Club) May 2025 - June 2025

- Designed domainspecific signals and ran a featureselection pipeline, boosting downstream model signal and reducing feature set by>50%.
- Applied SMOTE to correct a3:1 class skew, to maximize F2and recall, cutting false negatives by ~20% compared to default settings.
- Trained multiple classifiers (LogisticReg, RF, XGBoost, LightGBM), and integrated SHAPbased explainability for validation

Weakly Supervised Localization and Triplet Detection in Surgical Videos | Prof Aparajita Khan

January 2025 - February 2025

- Leveraged a ResNet50 backbone to jointly detect instruments, recognize actions, and extract triplet relationships with precise boundingbox association
- Integrated GradCAM for visual interpretability and devised a weakly supervised learning scheme to train without spatial annotations.
- Outperformed the baseline model with significant improvements in key metrics, including mAP = 0.16 (baseline: 0.0300).

Deep learning Model for Detecting Acid-Fast bacilli in Cytopathology Smears | Prof Partha Pratim Roy

May 2025 - June 2025

- Employed an autoencoders channelwise reconstruction errors to pick the top three informative channels (L,S,V), then fused them with Sobel edges and CBAM attention in a reconweighted ResNet18 backbone.
- Designed an asymmetric focal loss (_FP=1.7) combined with dynamic threshold tuning to counteract extreme class skew and prioritize bacilli recall.
- Benchmarked against a standard RGB ResNet18 baseline, demonstrating clear gains in detection robustness and localization quality under severe class imbalance.

Semi-Supervised Semantic Segmentation with Cross-Consistency Training (CCT) | Self

June 2025

- Implemented Cross-Consistency Training (CCT) for semi-supervised semantic segmentation by enforcing consistency in encoder outputs through novel perturbations.
- Trained a shared encoder and main decoder in a supervised manner while using auxiliary decoders to improve encoder representations through consistency constraints.
- Applied pseudo-labeling for weak supervision to enhance segmentation performance

Fine Tuning Deep Learning Models on Astrophysical Datasets | IIT Roorkee(Physics and Astronomy Club)

October 2024 - December 2024

- Fine-tuned a pre-trained ResNet-50 model on the GalaxyZoo dataset for galaxy morphology classification.
- Evaluated baseline performance using ImageNet weights, then applied supervised fine-tuning and Low-Rank Adaptation (LoRA) for improved accuracy.
- Compared performance metrics across different tuning strategies to assess model generalization and domain transfer effectiveness.

Awards / Scholarships / Academic Achievements

- All India Rank 8530, JEE Advanced
- All India Rank 12949, JEE Mains
- Runner Up in Beginner's Hypothesis Sophomores organised by Data Sciences Group (DSG) at IIT Roorkee
- Achieved 5th rank globally in SeePhys Challenge @ ICML 2025 a large-scale vision-language competition on physics reasoning with 2,000+ multimodal problems and 2,200+ diagrams. Built and optimized a VLM-based system capable of solving complex physics questions by combining schematic interpretation with natural language understanding.

Positions of Responsibility & Extra Curriculars

- Performed comprehensive exploratory data analysis (EDA) on call center datasets to identify behavioral and service-related factors contributing to customer churn.
- Engineered features from call duration, frequency, resolution time, and customer service metrics to enrich model inputs.
- Built and evaluated machine learning models (e.g., Random Forest, XGBoost) to accurately predict churn, enabling proactive customer retention strategies.

Research Publications

- Parshiv Kapoor, Yash Bansal, Agam Pandey, "Zero-Shot Vision Language Reasoning via Dual-layer Scene Graph Chain of Thoughts (Student Abstract)", in AAAI Student Abstracts, AAAI Conference on Artificial Intelligence (Student Abstract Track) - [Accepted], 2025
- Parshiv Kapoor, Pranshu Danani, Yash Bansal, "TWIST: Temporal Weakly-Supervised Triplets Recognition in Surgical Videos (Student Abstract)", in AAAI Student Abstracts, AAAI Conference on Artificial Intelligence (Student Abstract Track) - [Accepted], 2025
- Parshiv Kapoor, Yash Bansal, Myes Deychen, Sherrin Jacob, Venkat Iyer, Lavleen Singh, Aparajita Khan, Partha Pratim Roy, "Weighted ColorMorphology Feature Fusion for Tuberculosis Bacilli Detection from Cytopathology Images", in Conference Proceedings (ICVGIP 2025), ICVGIP 2025 (Indian Conference on Computer Vision, Graphics and Image Processing) - [Accepted], 2025

References

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Prof Aparajita Khan

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