

# Purva Parmar

M.Tech Artificial Intelligence

[GitHub](#) | [LinkedIn](#) | [Scholar](#) | [Website](#)

## Education

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**M.Tech, Artificial Intelligence**, Indian Institute of Science (IISc), Bengaluru **2024 – 2026**  
*CGPA : 8.0*

**BS-MS (Dual Degree), Mathematics**, IISER Pune **2018 – 2023**  
*Indian Institute of Science Education and Research, Pune · CGPA : 8.1*

## Internships

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**AlgoAnalytics Pvt. Ltd.** *Jul 2022 – Apr 2023*  
*Data Science Intern* *Pune*

- Built **Semantic Search and Question-Answering** systems (Masters Thesis) leveraging the Haystack NLP framework and HuggingFace Transformer models for a critical financial product.
- Experimented with vector databases (Elasticsearch, FAISS); created a custom annotated dataset for systematic evaluation.
- Architected a search API using **Dense Passage Retrievers**, covering data retrieval, embedding computation, and semantic ranking.
- Stack: Python, Git, AWS/Azure, Docker, pytest.

**Indraprastha Institute of Information Technology Delhi (IIIT-D)** *Jun – Jul 2020*  
*Summer Research Intern* *Remote*

- Built a Python web-scraper (Requests + Selenium) to assemble the **IndianFood10 dataset** (the largest Indian-cuisine image dataset at the time) and applied YOLOv4 object detection (mAP 91.8%, F1 0.90).
- Co-authored a **Best Student Paper Award** recipient at DECOR@ICDE 2022; see Publications below.
- Extended the dataset to IndianFood20 (20 food classes) for the broader research community.

## Projects

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**Evaluating Adversarial Robustness of I-JEPA** *Sep – Nov 2025*  
*DS 307: Ethics in AI (Prof. Danish Pruthi), IISc* [Code](#)

- Examined the robustness of **Image Joint-Embedding Predictive Architecture (I-JEPA)**, a self-supervised model family that predicts abstract feature representations rather than reconstructing pixels, on Vision Transformers.
- Applied adversarial attacks (FGSM, PGD) to identify minimal perturbations that cause misclassification.

**LLMs and Chess** *Feb – Apr 2025*  
*E2 335: Topics in AI (Prof. Aditya Gopalan), IISc* [Code](#)

- Benchmarked open-source LLMs (1B–8B parameters) against the Stockfish engine; found smaller models perform poorly and degrade with scale on chess reasoning.

- Applied **SFT + LoRA (PEFT)** fine-tuning, achieving modest but consistent performance improvements.

## Kolmogorov-Arnold Networks (KANs)

E9 205: ML for Signal Processing (Prof. Sriram Ganapathy), IISc


Sep – Nov 2024

 [Code](#)

- Extended the KAN architecture with **learnable multiplication nodes** and convolutional layers, unifying prior work into a single-parameter framework with greater flexibility and faster training.
- Matched vanilla MLP and CNN baselines on MNIST and CIFAR-10 image classification.

## Publications

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- Pandey, D., **Parmar, P.**, Toshniwal, G., Goel, M., Agrawal, V., Dhiman, S., Gupta, L., & Bagler, G. (2022). *Object Detection in Indian Food Platters using Transfer Learning with YOLOv4*. In *2022 IEEE 38th International Conference on Data Engineering Workshops (ICDEW)*, pp. 101–106. **Best Student Paper Award**.  [doi:10.1109/ICDEW55742.2022.00021](https://doi.org/10.1109/ICDEW55742.2022.00021)

## Relevant Courses (PG)

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Natural Language Processing · Reinforcement Learning · Generative and Agentic AI · Machine Learning · Linear Algebra and its Applications

## Certifications

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### Japanese Language Proficiency Test (JLPT), N2

2026

Japan Foundation and Japan Educational Exchanges and Services

## Languages

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English · Hindi · Gujarati · Japanese

## Leadership & Activities

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- **Co-Organizer**, TEDxIISERPune (2020)
- **Organizer**, WCA-approved Cubing Competitions: IISER Pune Cube Open (2019, 2022), IISER Pune Summer Open (2023)
- **Teaching Assistant**, DS 215: Introduction to Data Science, August 2025 Semester at IISc Bengaluru
- **Teaching Assistant**, DS 207: Introduction to Natural Language Processing (NLP), January 2026 Semester at IISc Bengaluru