

EDUCATION

UCLA Samueli School of Engineering | *STEM F-1 VISA* Los Angeles, California
Master's of Engineering in AI (Graduation: Sept 2025) 2024 – present

- Machine Learning, Distributed Training & Optimizations, NLP

Indian Institute of Technology (IIT) Gandhinagar Gandhinagar, India
B.Tech in Computer Science and Engineering | CGPA: 3.8 2017 – 2021

- Data Science, Machine Learning, NLP, Probability and Statistics, Databases, Data Structures and Algorithms, Linear Algebra
- Honors:** Dean's List for academic excellence, Professor Nitish Thakor Scholarship for academic excellence
- Teaching Assistantship:** ES 654: Machine Learning, CS 614: NLP, Short Course on Data Science & Analytics

PROFESSIONAL EXPERIENCE

ARTPark (AI & Robotics Tech Park), Indian Institute of Science (IISc) Bengaluru, India
Machine Learning Engineer Sept 2023 – Aug 2024

- Built a cost effective LLM copilot service for ARMMAN to streamline support workflow between health workers and medical officers for faster diagnosis and treatment in rural sector of India.
- Developed multilingual and multimodal medical chatbot supporting Indic languages and speech, enabling health workers to receive real-time, reference-backed responses enhancing reliability and transparency in generated response.
- Received Grant Funding from Bill & Melinda Gates Foundation. Our work has also been featured by Bill Gates in his **[Blog]**.

OrbitShift.AI Remote
Machine Learning Engineer May 2023 – Sept 2023

- Developed a people recommendation model using semantic matching for finance and sales applications. Enhanced model accuracy by 4% through implementation of contrastive learning losses, improving decision-making efficiency.
- Optimization:** Implemented Elastic search framework to optimize search API performance, reducing response time from 9 seconds to under 2 seconds, resulting in a 78% improvement in efficiency for text-based queries.
- Automation:** Developed LLM-based APIs for automated data extraction, text tagging, PDF summarization, and sentence paraphrasing. Leveraged cutting-edge models including GPT, Gemini, and Claude to enhance processing efficiency and accuracy.

Enphase Energy Bengaluru, India
Machine Learning & Software Engineer July 2021 – April 2023

- Architected and developed a predictive solar energy forecast API for the Enphase App. Leveraging historical energy data we forecast the energy output of the Enphase System for future days. Devised algorithm achieves R^2 greater than 0.9 for first three days.
- Optimization:** Benchmarked the deep learning model performance using light-weight auto-regressive models. Drastically reduced the API response time (within 3000ms) as compared to the previous baseline (10s).
- Collaborated cross-functionally to develop key features for Enlighten Homeowner app, including support history and data visualization tools. The app empowers customer to track system analytics and performance data **[App Store Link]** **[Play Store Link]**

INTERNSHIPS

Computer Vision and Intelligence Research Lab, IIT Kharagpur Kharagpur, India
Research Intern May 2019 – July 2019

- Constructed a multimodal architecture proficient in performing image inpainting tasks, precisely interpreting and executing upon natural language expressions linked to specific objects.
- Designed a two-stage pipeline wherein the inaugural stage engenders a segmentation mask derived from the input query, followed by a second stage dedicated to proficient inpainting utilizing the generated mask.
- Minimized the occurrence of inpainting artifacts, such as blurring and distortion, through the integration of contextual attention layers, thereby enhancing image quality and consistency.

EY (Ernst & Young) Bombay, India
Data Intern Dec 2018 – Jan 2019

- Identified core reasons behind significant skill gaps fueling youth unemployment in South Asian nations, paving the way for targeted interventions and policy reforms.
- Successfully orchestrated a strategic reduction in overheads associated with government and private sector vocational training programs, fostering optimal utilization of resources and enhancing the potential ROI.

TECHNICAL SKILLS

- **Languages:** Python, C, Java, Javascript, R, MATLAB
- **Frameworks/Softwares:** Hugging Face, PyTorch, Tensorflow, Flask, FastAPI, LATEX, MongoDB, Pytest, Docker, Git, Apache AirFlow, Numpy, Pandas, Matplotlib, Scikit-Learn, Seaborn, Keras, Opencv, NLTK, Textacy, Jupyter, Google Colab, VSCode
- **Key experience:** Machine Learning Research, Model Development, Model Finetuning, Natural Language Processing, Generative AI & LLMs, Unit testing, Transfer learning, Data Analysis, LLM Automation, Time Series Modelling
- **Leadership skills:** Team building and leading, Business communication, Project management, Agile development, Professional writing

PUBLICATIONS

- Pratik Kayal, **Mrinal Anand**, Harsh Desai, and Mayank Singh **Tables to LaTeX: Structure and Content Extraction from Scientific Tables** In *Proceedings of International Journal on Document Analysis and Recognition (IJDAR-23)* [[paper](#)]
- **Mrinal Anand**, Pratik Kayal and Mayank Singh, **Adversarial Robustness of Program Synthesis Models**, In *Advances in Programming Languages and Neurosymbolic Systems Workshop*, at **NeurIPS-21** [[paper](#)]
- **Mrinal Anand**, Pratik Kayal and Mayank Singh, **AutoCoder: Leveraging Transformers for Automatic Code Synthesis**, In *Advances in Programming Languages and Neurosymbolic Systems Workshop*, at **NeurIPS-21** [[paper](#)]
- **Mrinal Anand***, Nidhin Harilal*, Chandan Kumar*, and Shanmuganathan Raman **HDRVideo-GAN: Deep Generative HDR Video Reconstruction** In *Proceedings of 12th Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP'21)* [[paper](#)]
- Harsh Patel*, Shivam Sahni*, Varun Jain*, Praveen Venkatesh*, **Mrinal Anand** and Mayank Singh. **Program Synthesis: Does Feedback Help?** In *YRS at ACM India Joint International Conference on Data Science and Management of Data (CoDS-COMAD 2022)* [[paper](#)]
- Pratik Kayal, **Mrinal Anand**, Harsh Desai, Mayank Singh **ICDAR 2021 Competition on Scientific Table Image Recognition to LaTeX**. In: *Lladós J., Lopresti D., Uchida S. (eds) Document Analysis and Recognition – ICDAR 2021*. ICDAR 2021 Lecture Notes in Computer Science, vol 12824. Springer, Cham. [[paper](#)] [[competition](#)]
- [[Preprint](#)] **Mrinal Anand**, Pratik Kayal, and Mayank Singh (2021). **On Adversarial Robustness of Synthetic Code Generation**. ArXiv, abs/2106.11629. [[paper](#)]

ACADEMIC PROJECTS

Adversarial Robustness of Code Generation Systems [[Paper-1](#)] [[Paper-2](#)]

NLP, IITGN

- Devised black-box adversarial attacks and demonstrated the brittleness of the SOTA code generation model under adversarial settings.
- Proposed a new data augmentation algorithm to construct an adversarially robust dataset (AlgoLisp++) compared to AlgoLisp; Proposed a gated-attention transformer model and showed its superior adversarial performance than the vanilla attention model.
- Published two papers in AIPLANS at NeuIPS-21. Awarded Best Research Presentation at EEML-2020.

HDR Video-GAN: Deep Generative HDR Video Reconstruction [[Paper](#)]

Computer Vision, IITGN

- Proposed a temporally stable GAN-based mode for an HDR video reconstruction model that achieved state-of-the-art results.
- Developed advanced HDR frame reconstruction technique, integrating perceptual and style-aware content losses, optical flow utilization, and temporal-stability regularization to enhance visual quality and reduce temporal incoherence.
- Designed and implemented a self-supervised denoising block to extract clean LDR from noisy LDR frames, demonstrating significant improvement in image quality and processing efficiency.

Monsoon Rainfall Prediction [[Presentation](#)]

Applied ML, IITGN

- Implemented a deep learning approach for predicting the overall rainfall pattern in India during the monsoon season.
- Clustered the country into different zones to account for the spatiotemporal distribution of rainfall in India. Distance-based clustering methods, e.g. Netwon-Raphson method, give the best performance compared to K-Means and DBSCAN.
- Demonstrated that local factors (surface temperature, pressure) have greater influence than global factors (SSTs), enhancing climate model accuracy.

POSITIONS OF RESPONSIBILITY

- **Mentor/Buddy:** Onboarded several new joiners during my professional experience. Mentored two interns while at ARTPark.
- **Reviewer:** Served as a reviewer in a peer reviewed workshops and conferences (NAACL, ACL, AIPLANS at NeurIPS-21).
- **Teaching Assistant:** Machine Learning, NLP, Short Course on Data Science & Analytics, IIT Gandhinagar
- **Senior Executive:** Entrepreneurship Initiative, IIT Gandhinagar
- **Project Mentor:** Coding Club (Metis), IIT Gandhinagar
- **Team Leader:** 7th Inter IIT Tech Meet: Secured 3rd position among 23 participating IITs for Eye in the Sky challenge IIT Bombay