

# Charmi Padh

✉ charmi.padh030206@gmail.com |  Charmi Padh |  CharmiPadh03

## EDUCATION

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- **LDRP Institute Of Technology and Research**  
*Bachelor of Engineering in Computer Engineering*

2023 – 2027  
Gandhinagar, Gujarat

## SKILLS

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- **Languages:** C | C++ | HTML5 | CSS | Python
- **Framework/Libraries:** Flask | Django | Tailwind CSS | Pandas | Numpy | Tensorflow | Keras | OpenCV | FastAPI
- **Database:** MySQL | PostgreSQL
- **Version Control and Tools :** Git | Github | PowerBi

## COURSEWORK

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- Data Structures and Algorithms | Operating Systems | OOP | DBMS | Computer Networks

## WORK EXPERIENCE

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- **Reliance Industries Limited**

14th May 2025 – 14th Jun 2025



- Role: AI/ML Intern
- Developed a gasifier refractory lifespan prediction system by integrating and preprocessing IP21 and LIMS datasets to analyze degradation patterns and estimate the remaining useful life of refractory bricks.
- Developed advanced CNN-LSTM models with feature/time attention to capture refractory wear patterns and applied analyze degradation patterns and estimate the remaining useful life of refractory bricks.

## PUBLICATION

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- **TrafficEye : Intelligent Traffic Optimization using Deep Learning Approach**



- Published in *IEEE International Conference on Artificial Intelligence and Machine Vision (AIMV 2025)*
- Developed an AI-driven traffic optimization system using *YOLOv5s* on the IITM-HeTra dataset, achieving 71% accuracy with 1.4 ms inference, outperforming *YOLOv4*, *YOLOv7*, and *YOLOv8* in detection efficiency
- Designed and optimized the deep-learning pipeline for adaptive signal control, contributing to model development, experimentation, and validation, which led to a successful IEEE AIMV 2025 publication.

- **Research Book Chapter**


Accepted

- Co-authored a Springer chapter in *Studies in Computational Intelligence* titled “Quantum Simulation Tools,” providing a comparative analysis of leading platforms including Qiskit, Azure Quantum, and Cirq.
- Evaluated major quantum simulation frameworks by assessing architectures, performance, and limitations, and highlighted key research challenges.


PROJECTS

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• **Prompt-Injection-Prevention**

- *Python, pytorch, ViT* 
- Developed a hybrid AI safety system using rule-based filters and a ViT classifier to detect unsafe prompts, achieving 98.32% accuracy.
- Trained and optimized a Vision Transformer (ViT) hybrid model on labeled prompt datasets to identify harmful patterns and enhance LLM safety with high reliability.

• **SunAdapt**

- *MATLAB's surf, scatter3, patch* 
- Developed shading analysis and tilt-optimization algorithms in MATLAB using real terrain and irradiance data (NASA SRTM, NSRDB) for accurate solar energy prediction.
- Conducted data analysis and integrated models for dual-mode (urban + agrivoltaic) solar deployment, enhancing a unified tool for efficient and policy-aligned solar planning.

LEADERSHIP EXPERIENCE

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**Team Leader – SIH 2024 (Smart India Hackathon)**

*LDRP Institute of Technology and Research*

- Led a 6-member team in Smart India Hackathon 2024 to develop an AI/ML-based FaceSwap deepfake detection system for images and videos, managing task delegation, presentations, and technical execution to ensure timely project delivery.
- Transitioned the project into a research study, enhancing model accuracy and documenting results for academic publication.


VOLUNTEER EXPERIENCE

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**Digital & Design Committee Member**

*Aug 2024 – Jan 2025*


*IEEE LDRP-ITR Student Branch*

- Created digital and print assets for IEEE events using Canva, Adobe Illustrator, and Figma, enhancing event visibility and student engagement through creative design thinking. 

ACHIEVEMENTS

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• **Research Grant**

- **Research Project :**”SecurePark — The Real Edge AI, Vision and IOT based campus security and Parking ecosystem for KSV” ; funded with a research grant of Rs. 69,017/- by MMPSRPC, KSV. 

• **Conference Grant**

- **Research Paper :**”TrafficEye: Intelligent Traffic Optimization Using Deep Learning Approach  
Received a conference grant of Rs. 2,500/- from MMPSRPC, KSV. 

CERTIFICATIONS

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- NPTEL Data Analysis & Algorithms (Elite) 
- Conference Paper Presentation at 2nd IEEE International conference on Artificial Intelligence and Machine Vision 2025 