

# Abhishu Oza

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## Summary

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Graduate student specializing in Machine Learning and Computer Vision with practical experience in deep learning models, image processing, and geospatial data analysis. Skilled in Python, PyTorch, OpenCV, TensorFlow, seeking opportunities to contribute to large-scale research projects.

## Education

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<b>Rutgers University - New Brunswick</b> Master of Science, Computer Science	Jan 2025 to present GPA: 4.0/4.0
<b>Ahmedabad University</b> BTech in Computer Science and Engineering	Oct 2020 to May 2024 GPA: 3.2/4.0

## Experience

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**Student Programmer**, Department of Computer Science, Rutgers University May 2025 to Aug 2025

- Engineered an automated coding assignment generation system that converts DAGs (Mermaid) and YAML specifications into structured Jupyter notebooks for student assignments. Developed backend infrastructure using Flask, AWS, and PostgreSQL with robust server-side logic, database connectivity, and scalable architecture to support academic workflows.
- Implemented automated grading system architecture with flexible task configuration, comparison functions, and robust error handling for diverse data types (NumPy arrays, pandas DataFrames, statistical outputs).

**Undergraduate Researcher**, MICxN Lab, Ahmedabad University Sep 2022 to May 2024

- Conducted research and wrote my undergraduate thesis titled "Deep learning Solutions for Extended Time Series Forecasting" advised by Prof. Dhaval K. Patel. Investigated techniques for generating long-term time series forecasts. Analyzed state-of-the-art deep learning models (DLinear, TimesNet, iTransformer).
- Specialized in the application of Residential Energy Load forecasting. Proposed a novel fusion 1DCNN-LSTM based model architecture for load forecasting, work published in IEEE Access.

**Machine Learning Intern**, Reliance Jio Platforms May 2023 to Jul 2023

- Collaborated on the project titled "Agriculture - Crop Selection and Planning." Engineered a computer vision classification model utilizing VGG19 CNN. Performed detailed image annotation for satellite imagery, geofencing, and anomaly detection, enabling accurate, scalable data-driven decisions.
- Developed a geospatial web interface using the Google Maps API, enabling visual analytics and interaction with large-scale geospatial datasets.

## Publications

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- [1] **A. Oza**, D. K. Patel and B. J. Ranger, "Fusion ConvLSTM-Net: Using Spatiotemporal Features to Increase Residential Load Forecast Horizon," in *IEEE Access*, vol. 13, pp. 12190-12202, 2025, doi: 10.1109/ACCESS.2025.3528072 [🔗](#).

## Projects

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**Uncertainty Direction in LLM activation space** [GitHub](#) [🔗](#)

- Investigated whether uncertainty can be represented as a linear direction in the activation space of gpt2-small via mechanistic interpretability techniques.
- Performed activation caching and causal intervention using the TransformerLens [🔗](#) library

### Cell Segmentation using U-Net architecture

GitHub [↗](#)

- Led a team developing a U-Net CNN model for precise biomedical image segmentation, optimizing accuracy and training efficiency using TensorFlow.
- Evaluated various activation functions for accuracy, training time, and convergence.

### Preliminary Disease Prediction

GitHub [↗](#)

- Created a Bayesian network-based ML model and Flask-powered interactive web interface to predict diseases based on symptoms, enabling causal inferencing of symptoms for accurate disease prediction
- Integrated user-friendly visualization techniques.

### Betting Games Using Solidity

GitHub [↗](#)

- Created 3 casino games on solidity - roulette, blackjack, and slot machine.
- Utilized Chainlink-VRF for secure random number generation.

## Skills

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**Programming:** Python, C/C++ , Java, SQL

**Machine Learning:** PyTorch, TensorFlow, CNNs, RNNs, Transformers, Bayesian Networks

**Computer Vision:** OpenCV, Image Classification, Image Segmentation, Object Detection

**Data Analysis & Tools:** NumPy, Pandas, MATLAB, Linux Shell, Google Maps API

**Software:** AutoCAD, Fusion360

**Courses:** Machine Learning, Deep Learning, Computer Vision, Algorithms and Data Structures, Probability and Statistics, Linear Algebra

## Activities

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**Co-Founder and Chairman** – Ahmedabad University ACM Student Chapter

Aug 2022 to Aug 2023

- Co - Founded and became chairman of the ACM student chapter at Ahmedabad University.
- Hosted events and conducted competitions for Machine Learning and Blockchain.

**Silver Certificate** – Technothon

Jul 2019

- Secured an All-India Rank of 62 in Technothon, a school championship organized by the IIT Guwahati.

**Volunteer** – Prabhat Foundation

Sep 2021 to Dec 2021

- Completed 30 hours of volunteer work comprised of creating disability awareness.