

# Akash Gupta

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## EDUCATION

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### Indian Institute of Technology - ISM

*Bachelor of Technology in Electronics and Communication Engineering*

Dhanbad, Jharkhand

Nov 2020 - Present

## EXPERIENCE

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### Machine Learning Intern

*Nyun AI*

Dhanbad, India

May 2023 - Present

- Developed and optimized ML models for precise classification of giga-pixel images, enhancing performance and accuracy in image analysis.
- Adapted Patch Gradient Descent method to optimize giga-pixel image classification, achieving superior accuracy and computational efficiency.

### Deep Learning Research Intern

*TransmuteAI Lab*

Dhanbad, India

May 2022 - May 2023

- Contributed towards implementing and benchmarking quantization methods in TrAILMet, an open-source Pytorch Library for deep learning model compression. [Link]
- Ran a large suite of deep learning experiments and contributed towards an upcoming journal paper based on the developed software.

### Machine Learning Intern

*RealMaker Research Lab, South Korea*

Remote

Nov 2022 - Dec 2022

- Conducted ablation study, implemented and documented performance evaluation of a novel KNN classification variation against existing methods on diverse datasets with extreme data imbalance. [Link]

### Computer Vision Research Intern

*UiT - The Arctic University of Norway, Tromso, Norway*

Remote

Sep 2022 - Nov 2022

- Played a vital role in developing innovative training pipelines for CNN and vision transformers, optimizing the handling of large images within resource limitations.

## RESEARCH PUBLICATIONS

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### Benchmarking Model Training and Inference for Resource-Constrained Deep Learning

[Link]

*R. Tiwari et al., 2023, ICCV workshops.*

- Summary paper for RCV2023 Challenges: The goal is to discuss and analyze the results of two resource-constrained deep learning challenges, focusing on memory and time limitations, and to emphasize the importance of sustained research efforts in addressing the challenges of resource-constrained deep learning.
- Co-authored the research paper and helped test and reproduce the submission results.

### UltraMNIST Classification: A Benchmark for Training CNNs on Large Images

[Link]

*D. Gupta, U. Bamba, A. Thakur, A. Gupta, S. Sharan, E. Demir, D.K. Prasad, 2022, arxiv*

- Contributed to the creation of the UltraMNIST dataset and developed baseline models for standard and budget-aware benchmarks.
- Co-authored the research paper and organized the GitHub repository for reproducing results. [Link]

## ADDITIONAL PROJECTS

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### The Gen Shop - Fashion Recommender System

*Flipkart Grid 5.0*

- Led a team of three in developing an AI-powered website, combining Generative Vision and LLM models, recommender systems, and web scraping. Deployed on Google Cloud VM with ngrok integration.
- Result: Interactive fashion outfit generator and recommender. [Link]

### Integrated Campus App - IIT-Dhanbad

*Self Learning*

- Collaborated on an all-in-one app for IIT-Dhanbad, featuring face recognition-based student information, library vacancy tracking, lost and found section, mess management, timetables, campus map, and more.

- Enhanced student interaction and services through digital platforms.

## Auto-evaluation of Tenders using NLP

*MCL - Coal India Limited*

- Developed an end-to-end model pipeline for tender evaluation, minimizing human involvement in document verification.
- Implemented OCRs to extract and structure text from scanned PDFs and algorithms to verify authenticity.

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## TECHNICAL SKILLS

**Machine Learning:** PyTorch, TensorFlow, Computer Vision, NLP, Model Compression, Quantization.

**Programming:** Python, C/C++, MATLAB, SQL.

**Tools:** Git, GitHub, Docker, VS Code.

**OS:** Linux, Windows.

**Languages:** English, Hindi.

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## EXTRA CURRICULUM

### American Express - Default Prediction

[\[Link\]](#)

*Kaggle Bronze Medal*

- Contributed to American Express' Default Prediction Competition, utilizing customer profiles and historical data to predict credit card payment defaults.

### Machine Learning Enthusiast

Jul 2021 - Present

*CyberLabs, IIT-ISM*

*Indian Institute of Technology, Dhanbad*

- Active member of CyberLabs, IIT-ISM's tech club; engaging in reading research papers, completing standard machine learning courses, participating in Kaggle contests, and collaborating on hackathons to foster comprehensive experience and knowledge growth.

### Extra Courses

*Coursera/Youtube*

- Machine Learning by Andrew NG.
- Neural Network and Deep Learning by deeplearning.ai
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
- Convolutional Neural Network.
- CS231n, CS229n.
- Computer Networks, Database management system, Operating System, System Design, Data structure and algorithm.