

Harshit Kumar

Boston, MA

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Education

Northeastern University, Boston, MA

Khoury College of Computer Sciences

Sep 2022 - Present

MS Artificial Intelligence

GPA: 3.8/4.0

Courses: DS5010 Intro to Programming for Data Science, CS5100 Foundations of AI, CS5800 Algorithms, CS5010 Programming Design Paradigm, CS6140 Machine Learning, CS5170 AI for Human Computer Interaction

Guru Gobind Singh Indraprastha University, Delhi, India

Aug 2016 - Sep 2020

BTech in Computer Science and Engineering, top-4 in class

GPA: 8.72/10.0

Skills

Programming/Markup Languages: Python, C++, C, SQL, Java, R

Machine Learning: PyTorch, Tensorflow/Keras, OpenCV, scikit-learn, pandas, numpy, matplotlib

Tools & Frameworks: Django, Flask, PostgreSQL, AWS SageMaker, Nvidia TensorRT, DeepStream, MLFlow, OpenVINO

Experience

The Jackson Laboratory, Bar Harbor, Maine

Jul 2023 - Dec 2023

Deep Learning Research Co-op

- Applied Explainable AI methods: saliency maps, integrated gradients on DNA sequence data using *PyTorch Captum*.
- Researched on model interpretability methods for the Graph Neural Networks such as GNNExplainer, GraphSVX.
- Generated benchmark synthetic datasets for graph classification tasks for biomedical networks.
- Embedded graph motifs into synthetic graphs, simulating real-world structural patterns found in biomedical networks.

Khoury College of Computer Sciences, Boston, MA

Jan 2023 - Apr 2023

Graduate Teaching Assistant

- Solved students' doubts for the course DS5010 Intro to Programming for Data Science under Prof Kylie Bemis.

Vehant Technologies, Noida, India

Aug 2020 - Aug 2022

Machine Learning Engineer

- Implemented 10+ *People and Traffic Analytics* solutions - line crossing, crowd estimation, abandoned object detection.
- Optimized end-to-end pipeline (GPU DL inference + CPU process) 1.5 times with *Mixed Precision* and *Quantization*.
- Trained and deployed 8+ deep learning models using *PyTorch*, *Tensorflow*, *Nvidia TensorRT*, *DeepStream*, *Intel OpenVINO*.
- Mentored 2 fellow teammates and gave technical sessions on *Edge AI* topics w.r.t. Video Analytics for Smart Cities.

R&D Intern

Jun 2019 - Jul 2020

- Researched and fine-tuned models for 15+ multi-label Pedestrian Attribute Recognition i.e. clothing, age, gender, etc.
- Applied monocular depth estimation methods for under-vehicle object detection with 90% accuracy.

Arbunize Digital Media Pvt Ltd, Delhi, India

Jun 2018 - Aug 2018

AI (NLP) Intern

- Adapted Satz sentence boundary detection using *decision trees* and *neural networks* reducing errors by 1/3.
- Extracted skills from resume and worked on classification models with 0.89 F1-score to predict job title.

Projects

Image colorization of historical paintings using deep learning [\[github\]](#)

Feb 2023 - Apr 2023

- Leveraged U-Net and pix2pix Convolutional Generative Adversarial Network, to colorize grayscale historical paintings.
- Utilizing CIELAB color space conversion and Patch discriminator for enhanced image-to-image translation.

Pothole detection and segmentation [\[github\]](#)

Jan 2020 - Jun 2020

- Devised custom Mask R-CNN and YOLACT models for pothole segmentation on Indian roads with 25fps speed.
- Attained 86% accuracy, 0.30 mAP on custom testing dataset with PyTorch.

Events & Achievements

- Conferences:** Computer Vision Summit'23, 22, NVIDIA GTC'22, GTC'21, GTC'20, PyData'22, Google Cloud Summit'18.
- Hackathons:** Smart India Hackathon'18 finalist, Rajasthan Hackathon 5.0, Rajasthan Hackathon 4.0.
- Received PyTorch Scholarship (**Deep Learning Nanodegree**) and Bertelsmann Scholarship (**Data Analyst Nanodegree**) by being in **top 3% out of 10k** applicants.
- Top-15 answerer** of all time on Stack Overflow in PyTorch category (**10th** to earn **PyTorch Silver badge**).
- Received Vehant Technologies' **Summer 2021 quarterly award** for best problem solving ability.