Harshit Kumar

Boston, MA

kHarshit.github.io | kumar.hars@northeastern.edu | +1 (857) 693−9361

 github/kHarshit | linkedin/kHarshit | stackoverflow/6210807

Education

Northeastern University, Boston, MA
Khoury College of Computer Sciences
Sep 2022 - Present
MS Artificial Intelligence
GPA: 3.8/4.0

Courses: Intro to Programming for Data Science, Foundations of AI, Algorithms, Programming Design Paradigm, Machine Learning, AI for Human Computer Interaction, Pattern Recognition and Computer Vision, Large Language Models

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, AWS SageMaker
Tools & Frameworks: Nvidia TensorRT, DeepStream, ONNX, MLFlow, Intel OpenVINO, Django, Flask, GStreamer

Experience

The Jackson Laboratory, Bar Harbor, Maine — *Jul 2023 - Dec 2023*
Deep Learning Research Co-op

o Applied *Explainable AI* methods: Saliency Maps, Integrated Gradients on DNA sequence data using *PyTorch Captum*.
o Researched on model interpretability methods for the Graph Neural Networks such as GNNExplainer, GraphSVX.
o Generated benchmark synthetic datasets for graph classification tasks for biomedical networks using *PyTorch Geometric*.
o 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

o Resolved queries from students in DS5010 Intro to Programming for Data Science course under Prof. Kylie Bemis.
o Graded Python programming and data science assignments and quizzes of 50+ students.

Vehant Technologies, Noida, India — *Aug 2020 - Aug 2022*
Machine Learning Engineer

o Implemented *10+ People and Traffic Analytics* solutions - line crossing, crowd estimation, abandoned object detection.
o Optimized end-to-end pipeline (GPU DL inference + CPU process) *1.5 times* with *Mixed Precision, Quantization, Pruning*.
o Trained and deployed 8+ deep learning models using *PyTorch, Tensorflow*, Nvidia *TensorRT, DeepStream*, Intel *OpenVINO*.
o 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*

o Researched and fine-tuned models for 15+ multi-label Pedestrian Attribute Recognition i.e. clothing, age, gender, etc.
o 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

o Adapted Satz sentence boundary detection using *decision trees* and *neural networks* reducing errors by 1/3.
o 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*

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

Pothole detection and segmentation [github] — *Jan 2020 - Jun 2020*

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

Events & Achievements

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