Harshit Kumar

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Education

Northeastern University, Boston, MA — *Sep 2022 - Present*
Khoury College of Computer Sciences
MS Artificial Intelligence — *GPA:* 3.78/4.0
Courses: DS5010 Intro to Programming for Data Science, CS5100 Foundations of AI, CS5800 Algorithms

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, JavaScript, R, CSS3, LaTeX
Machine Learning: PyTorch, Tensorflow/Keras, Nvidia DeepStream, OpenCV, scikit-learn, pandas, numpy, matplotlib
Tools & Frameworks: Django, Flask, PostgreSQL, AWS SageMaker, MLFlow, Linux, Android

Experience

Khoury College of Computer Sciences, Boston, MA — *Jan 2022 - Present*
Graduate Teaching Assistant
- Solved students' doubts for the course DS5010 Intro to Programming for Data Science.
- Graded assignments and quizzes of 50+ students.

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*.
- 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

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.

Image captioning using Encoder-Decoder [github] — *Jan 2019 - Feb 2019*
- Developed image captioning app based on Neural Image Caption model and reached BLEU-4 of 28.
- Designed ResNet152 CNN as encoder and LSTM as decoder, and deployed model on Django server.

Face Generation using DCGAN [github] — *Feb 2019 - Mar 2019*
- Implemented and trained Deep Convolutional Generative Adversarial Network on 200k images to generate faces.
- Achieved generator loss of 0.7 and discriminator loss of 1.8 to generate almost-real faces.

Events & Achievements

- **Conferences:** Computer Vision Summit'22, PyData'22, NVIDIA GTC'22, GTC'21, GTC'20, 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.