Harshit Kumar

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Education

Northeastern University, Boston, MA
Khoury College of Computer Sciences
MS Artificial Intelligence *Sep 2022 - May 2024 (Expected)*
Courses: DS5010 Intro to Programming for DS, CS5100 Foundations of AI, CS5800 Algorithms

Guru Gobind Singh Indraprastha University, Delhi, India
Ambedkar Institute of Advanced Communication Technologies and Research *(now NSUT East Campus)*
BTech in Computer Science and Engineering, top-4 in class, CGPA: 8.72/10.0 *2016 - 2020*

Skills

- **Programming/Markup Languages:** Python, C++, C, SQL, Java, JavaScript, R, CSS3, LaTeX
- **Machine Learning:** PyTorch, Tensorflow/Keras, Nvidia DeepStream, OpenCV, scikitlearn, pandas, numpy, matplotlib
- **Tools & Frameworks:** Django, Flask, PostgreSQL, AWS SageMaker, MLFlow, Linux, Android

Experience

Vehant Technologies, Noida, India
Machine Learning Engineer *Aug 2020 - Aug 2022*
- Researched and solved computer vision related problems w.r.t. Intelligent **Video Analytics for Smart Cities**.
- Implemented **10+ People and Traffic Analytics** solutions to Vehant's *Okean AI* platform – line crossing, dense crowd estimation, intrusion, abandoned object detection, wrong direction vehicle movement, etc.
- Optimized the *Vehant's Okean AI* platform's end-to-end pipeline (GPU DL inference + CPU processing) using **Mixed Precision** and **Quantization** by **1.5 times**.
- Integrated and deployed *Edge AI* deep learning models using **PyTorch**, Nvidia **TensorRT**, **DeepStream** and **MLFlow**.
- **Preprocessed, wrangled, and analyzed** large person and vehicle datasets and trained models on them.

R&D Intern *Jun 2019 - Jul 2020*
- Researched and fine-tuned models for multi-label Pedestrian Attribute Recognition i.e. clothing, age, gender, etc.
- Researched on DL based monocular depth estimation methods for under-vehicle object detection.

Arbunize Digital Media Pvt Ltd, Delhi, India
AI (NLP) Intern *Jun 2018 - Aug 2018*
- Implemented Satz system for sentence boundary detection using **decision trees** and **neural networks**.
- Extracted skills from resume and worked on classification models to predict job title using them.

Projects

Pothole detection and segmentation [github] *Jan 2020 - Jun 2020*
- Developed custom Mask R-CNN and YOLACT instance segmentation models for real-time pothole detection and segmentation on Indian roads with PyTorch and achieved 86% accuracy, 0.30 mAP on custom testing dataset.

Analyze A/B Test Results [github] *Mar 2019 - Apr 2019*
- Analyzed the results of an A/B test run by an e-commerce website's newly developed page to increase conversion rate.
- Examined **hypothesis tests** and calculated p-values on observations and compared **A/B results** with **regression analysis**.

ImageCaptioner: Image captioning using Encoder-Decoder [github] *Jan 2019 - Feb 2019*
- Developed image captioning app based on Neural Image Caption model utilizing encoder-decoder architecture.
- Used CNN as encoder and LSTM as decoder, and deployed model on Django server.

DengueApp: Location based dengue prediction [webpage] *Jan 2018 - Mar 2018*
- Led a team of 5 students at *Smart India Hackathon 2018 grand finale* to develop an Android app that gives real-time location-based dengue risk index using ML model hosted on Django server.
- The gradient boosted trees, utilizing the weather conditions of user's location as features, outperformed other algos.

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
- **Udacity scholarships:** Received PyTorch Scholarship (**Deep Learning Nanodegree**)(**top 3% out of 10k)** and Bertelsmann Scholarship (**Data Analyst Nanodegree**).
- **Top 15 answerers** of all time on Stack Overflow in PyTorch category (**10th** to earn **PyTorch Silver badge**).
- Received Vehant's **Summer 2021 quarterly award** for best problem solving ability.