Harshit Kumar

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Education

Northeastern University, Boston
Khoury College of Computer Sciences
MS Artificial Intelligence *Sep 2022 - Present*

Guru Gobind Singh Indraprastha University, Delhi
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, R, CSS3, LaTeX
- **Machine Learning:** PyTorch, Tensorflow/Keras, Nvidia DeepStream, OpenCV, sklearn, pandas, numpy, matplotlib
- **Tools & Frameworks:** Django, Flask, PostgreSQL, AWS, Linux, Android

Experience

Vehant Technologies
Machine Learning Engineer *Aug 2020 - Aug 2022*
- Researched and solved 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 processing (GPU DL inference + CPU processing) using **Mixed Precision** and **Quantization** by **1.5 times**.
- Integrated and deployed *Edge AI* deep learning models using **Nvidia TensorRT** and **DeepStream**

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
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*
- Fine-tuned 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.

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.

TweetSense: Real-time social media sentiment analysis [webpage] *Jul 2018 - Aug 2018*
- Led a team of 3 students to develop an app that analyze tweets to provide real-time sentiment and tone analysis.
- Trained Naive Bayes classifier for text analysis and incorporated IBM Watson API for tone analysis.

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:** NVIDIA GTC'22, GTC'21, GTC'20, Developer Connect'18, PyData'18, Google Cloud Summit'18
- **Hackathons:** Smart India Hackathon'18 finalist, Rajasthan Hackathon 5.0, Rajasthan Hackathon 4.0
- **Udacity scholarships:** Received PyTorch Scholarship (**top 3% out of 10k)** and Bertelsmann Scholarship.
- Successfully completed Hacktoberfest'18 and Hacktoberfest'19 open-source challenges.
- **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.