DHRUV BANSAL

Boston, MA, 02215 | bansal.d@northeastern.edu | (617)-832-5660
GitHub: https://github.com/Dhruv0208 | LinkedIn: https://www.linkedin.com/in/dhruv-bansal-0802/
Available: **May – Dec 2022**

EDUCATION

Northeastern University, Boston, MA — Sept 2021 – Dec 2023
Khoury College of Computer Sciences, GPA: 3.67/4.00
Candidate for Master of Science in Robotics (Concentration: Computer Science)
Related Courses: Machine Learning, Robot Mechanics and Control

Manipal University Jaipur, Jaipur, India
Bachelor's Degree in Mechatronics, GPA: 8.50/10.0 — Aug 2017 – July 2021
Related Courses: Programming in C, Data Science, Fundamentals of Image Processing, Robot Path Planning and Control

TECHNICAL KNOWLEDGE

Languages:	Python, C++, C
Databases:	SQL, MySQL
Skills:	ROS, Computer Vision, Machine Learning, Deep Learning, Docker, GitHub
Libraries:	TensorFlow, Keras, OpenCV, NumPy, SciPy, Matplotlib, Scikit-Learn, Pandas
Softwares:	MATLAB, Tableau, MS-Office, Power BI, Linux, Windows

WORK EXPERIENCE

NVIDIA, Bengaluru, India (Research Intern – Machine Learning) — Dec 2020 – June 2021

- Engineered a novel architecture to do object detection using Python and TensorFlow model architecture and OpenCV, NumPy and TensorFlow for data pre-processing.
- Worked on NVIDA's Transfer Learning Toolkit (TLT) to develop a face mask detector and boosted mAP from 64.36 to 78.73 using algorithms namely pruning and automatic mixed precision.
- Chaired designing of data pipeline alongside other interns for Tata Consultancy Services (TCS) for steel defect detection problem datasetto make it compatible for NVIDIA's TLT.

OpenVision Systems Pvt. Ltd., Gurugram, India (Computer Vision Intern) — June 2020 – Aug 2020

- Constructed a COVID-19 Surveillance System brining OpenCV and Keras into play in Python Programming language with almost 100% training and validation accuracy.
- Build a Convolutional Neural Network for training over dataset and later tune hyperparameters to suitable values to achieve maximum accuracy.
- Singled out presence of mask and violation of social distancing norms. Based on Adrian's pyimagesearch Facemask Detector.

PROJECTS

Image Segmentation Using U-Net [Python, Keras, Sklearn, OpenCV, Patchify, NumPy, TIF]

- Implemented base model from scratch. And also apply it on different datasets and achieved 99.9% accuracy.
- Employed methods like pruning and layer dropout, was able to reduce above mentioned model size of zipped file by 90.75% with accuracy of 99.46%.

Screen Time Calculation of Characters [Python, Keras, Sklearn, OpenCV, NumPy, Pandas]

- Traversed a video frame by frame through a CNN to calculate the total screen time of character in that video.
- Images were turned into numerical arrays with help of NumPy and labels were reshaped into dummy variables through One-Hot Encoding. Data pre-processing was mainly done by means of OpenCV, NumPy and Pandas.

Garbage Segregation using SURF algorithm [Python, OpenCV, NumPy]

- Applied SURF algorithm to extract features from dataset. Drawn out features are afterwards exercised to distinguish between Biodegradable and Non-Biodegradable waste by detecting presence of merchandise marker on waste with an average accuracy of 93.58% on test data.
- Prepared a research paper for publication and was accepted and presented at ICCIDA-2018.The paper is being published in Handbook of Research on Machine Learning: Foundations and Applications

PUBLICATIONS

Garbage Detection using SURF Algorithm based on Merchandise Marker
Handbook of Research on Machine Learning (Chapter-14)

Detecting presence of Masks and violation of Social Distancing
Information Systems and Management Science (page: 67-73)