ABHISHEK TANDON

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Skill Set

Tools: Python, Java, C++, PyTorch, TensorFlow, OpenCV, Scikit-Learn   **Proficiency:** Deep Learning, Computer Vision

Professional Experience

Computer Vision Center | UAB, Spain | *Visiting Researcher*   Oct 2019 – Jan 2021
- o Worked in the Advanced Driver Assistance-Systems (ADAS) lab at Computer Vision Center (CVC, UAB) under the supervision of Dr Antonio Lopez. My area of research was in the fields of 3D object detection and domain adaptation.
- o Extending Generative Adversarial Networks (GANs) to the 3D domain to adapt synthetic 3D point cloud data to the real domain. Training 3D object detection models on the domain-shifted data to achieve higher performance.

Oracle | India Development Center | *Applications Engineer*   Jul 2018 – Sep 2019
- o Integrated Oracle sales platform with Slack using Oracle Service Bus, improving the user experience. Developed a usage tracking tool using Java. The usage data was conducive in convincing other teams to switch to Slack apps.

Intel Technologies | Bangalore, India | *Machine Learning Intern*   Jul 2017 – Dec 2017
- o Developed an ML solution to predict desk and lap mode laptop usage enabling the use of different thermal strategies in the two modes. Generated and annotated a custom dataset using sensor data in the two modes.
- o Trained models, such as RNN and decision tree, and achieved greater than 90% test accuracy. Deployed the model in OEM devices for further testing.

Projects

Emotions in Context: Emotic | [Code]   Apr 2020 – Jun 2020
- o Developed a PyTorch implementation of Emotic methodology of recognizing emotions in images, utilizing the context scene knowledge and features obtained from the target person, allowing to predict emotion categories even when the face of the target person is not visible. Trained CNN model achieving mAP of 26 over the Emotic dataset.

Cycle GAN SSIM | [Code] [Project Blog]   Apr 2018 – Oct 2018
- o Implemented Cycle Consistent GAN for painting-photo transfer (e.g., Monet painting to real life) using TensorFlow.
- o Qualitatively improved the generated images by using loss functions based on the structural-similarity index (SSIM) as the cyclic loss in place of the L1 loss. These functions helped the GAN better preserve details in the generated output.

Quality Control using Deep Learning | [Code]   Jan 2018 – May 2018
- o Developed a Convolutional Neural Network (CNN) based visual inspection pipeline for differentiating defective products from defect-free products. Trained CNN model on DAGM database to achieve 99% accuracy.

Education

B.E. (Hons.) In Mechanical Engineering, Birla Institute of Technology and Science, Pilani, Pilani Campus   **2014 – 2018**
CGPA: **8.55/10.0** | Coursework: Machine Learning, Data Structures & Algorithms, Object Oriented Programming

All India Senior School Certificate Examination (Class XII) – CBSE, Amity International School, Delhi   **2013 – 2014**
Percentage: **94.6%** | Received appreciation letter from Indian HRD Ministry for securing 100% marks in Computer Science

Certifications

Udacity Machine Learning Engineer Nanodegree   Apr 2020 – May 2020
- o Learnt how to package and deploy models and perform A/B testing using Amazon SageMaker service.
- o Developed projects on sentiment analysis, plagiarism detection as course projects.
- o Developed the capstone project on facial emotion recognition by training CNN's on FER 2013 dataset. Developed a web application using Flask and deployed the CNN model using Heroku. [Code]

Udacity Computer Vision Nanodegree   Oct 2019 – Dec 2019
- o Recipient of Facebook Secure and Private AI Udacity scholarship to pursue Computer Vision Nanodegree at Udacity.
- o Learnt about feature extraction techniques using OpenCV, both manual and using CNN filters, YOLO and SSD algorithms, CNNs in conjugation with RNNs, and object tracking and localization.
- o Developed projects on facial keypoints detection, image captioning and simultaneous localization and mapping (SLAM) and extra-curricular project on code optimization. [Code]

Intel - AI from Data Center to Edge   Sep 2019 – Oct 2019
- o Used Intel's OpenVINO toolkit to optimize deep learning models for deployment.

Udacity Secure and Private AI   Jun 2019 – Aug 2019
- o Learnt about privacy-preserving techniques, such as differential privacy and federated learning, to build secure AI applications using PySyft library. [Code] [Differential Privacy Blog Post]
- o Contributed to facial recognition ([Code]) and NSFW detector ([Code]) projects as part of the course challenge.