

Sanchit Tanwar

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SKILLS

Languages: Python, C++, Matlab

Tools: Pytorch, Keras, Tensorflow, OpenCV, PIL, Scikit-learn

EDUCATION

Thapar Institute of Engineering and Technology

Patiala, India

Bachelor of Engineering Electronics & Communication; CGPA: 8.4/10

2016-2020

Courses: Machine learning, Image Processing & Computer Vision, Data structures & algorithms, Operating Systems, Embedded Systems

DAV Public School

Panipat, India

High School; Percentage: 90.2%

2015-2016

EXPERIENCE

Computer Vision Engineer - Attentive.ai

July 2020 - Present

- Benchmarked several proposal based and without proposal based instance segmentation techniques on custom dataset.
- Implemented a change detection algorithm between multiple time instance imagery using custom solution on [xview dataset](#).

Computer Vision Research Intern - Attentive.ai

Jan 2020 - June 2020

- Implemented Learning without forgetting and knowledge distillation for semantic segmentation applications.
- Implemented several papers including Gated SCNN, PointNet for improving semantic segmentation on satellite imagery.

Freelancing - Profile Links: bit.ly/sanchitfl, bit.ly/sanchitup

June 2019 - Present

- Classroom activity monitoring system**
 - Developed a model for detection of sleeping and talking of students in a classroom using facial keypoints & gaze estimation.
 - Tracked monthly times of above activities for each student using face recognition for monthly feedback system for students.
- Background removal for video calls, bit.ly/demo-bgrm** - Developed a light weight realtime system from scratch in 2 phases:
 - Data collection and manual annotation (aided by actively trained models):
 - Collected data from open source platforms with a team of 10, the data was annotated by same team.
 - Developed a custom deep learning model with backbone inspired by resnet and hrnet architectures with dgcnet as decoder and a combination of dice loss, ohem loss, boundary aware loss, rmi loss and lovasz softmax loss.
 - The automatic segmentation of images using the above model helped to reduce the manual annotation time by 30%.
 - Developing a light-weight model for deployment:
 - Developed a light-weight model inspired by ghostnet architecture to work at 30 fps on an embedded hardware, using the combined loss as defined above.

KEY PROJECTS

- Real time Inventory tracker(bit.ly/inv-vid)**: Developed a software for gas industry to track loading/unloading and inventorying cylinders.
 - Developed an object detection model and a custom object counting algorithm, deployed on jetson nano to work in real time.
 - Counted objects were then logged under the record of the truck from which it was unloaded/loaded using license plate recognition and the loaded/unloaded count was then used for real time inventory management.
- License plate recognition(getplates.ml/)**: Developed a segmentation model to detect Indian plates, used lpr-net for text recognition.
- Engagement Detection**: Research project to detect engagement level of students (submitted for review).
 - Developed a novel attention-guided, CNN based model for user engagement recognition on [DAiSEE dataset](#).
- CrimeDetection**: Developed an industry grade Computer Vision based crime detection system using CCTV cameras.
 - Implemented the [real-world anomaly detection in surveillance videos](#) in pytorch and replaced the feature extraction model from C3D (used in paper) to slow-fast.
 - Observed that the pretraining on [sports-1m dataset](#) helps in improving the results and a pretrained model on other datasets gives sub-optimal performance.
- Artificial Eyes (bit.ly/art-eye)**: Developed a device for visually impaired people which generates image captions and converts them to speech of desired language, on raspberry pi.

ACHIEVEMENTS

- 120k+ total views on several deep learning blogs published on [medium](#) (bit.ly/mediumprof) including top publications like towards data science, the startup, analytics vidhya, towards ai.
- Kaggle (kaggle.com/sanchit2843) notebook and dataset expert.