Sanchit Tanwar

sanchittanwar75@gmail.com | +919050402843 | LinkedIn: sanchit2843 | Github: sanchit2843

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 structions & 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, Point rend for improving semantic segmentation on satellite imagery.

Freelancing - Profile Links: freelancer.com/sanchit, upwork.com/sanchit   *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,** Demo link- 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 resnest 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**: Developed a software for gas industry to track loading/unloading of cylinders and inventorying.
  - 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**: Developed an instance segmentation model to detect Indian number plates, lpr-net was used 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**: 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 computer vision and deep learning blogs published on medium.
- Kaggle notebook and dataset expert.