**Crowd Detection and Analysis for Surveillance Videos using Deep Learning**

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The main goal of the project was to enhance safety. The authors also note that crowd analysis can be beneficial for managing Covid-19 risks by helping to prevent large gatherings.

There are 2 datasets: for age prediction and for gender prediction. The dataset for age prediction contains 15910 JPG and PNG images and was divided into 3 classes: 1-30, 30-60 and 60+. The second one for gender prediction contains 3966 JPG images and was divided into 2 categories: male and female. Both datasets were taken from Kaggle. The ratio of the training set and the test set was 80:20.

The authors used 2 different methods based on Neural Networks in order to make a Crowd Density Estimation and some predictions of age and gender.

* Mobilenet Single Shot Detectors (SSD) – for crowd detection and crowd density estimation. The algorithm counts all people. It uses Unique Person Detection Algorithm for tracking people. This method works correctly.
* VGG-16 Model – for crowd analysis, model was pretrained and then classification is performer. Firstly the algorithm extracts the person and passes them to the Recognition module. There classification is made.
  + Age prediction test accuracy: 69%
  + Gender prediction test accuracy: 90%

The authors observed that the accuracy of predictions depends on image quality, as demonstrated using sample images taken during the day and at night.