CS464 - Project Proposal - Group 23
Don’t Get Lost in The Crowds

Berk Güler, Fuad Ahmad, Munib Emre Sevilgen,

Şeyma Aybüke Ertekin, Yağmur Özkök

Project Name: Crowd-Counting Using Convolutional Neural Networks

The Dataset

Shanghaitech is a dataset which is created for another crowd counting research [1]. The dataset contains 1198 images of crowded areas with annotated heads of people. Even if we may not be able to use all images in the dataset due to the memory constraints, the dataset is perfectly suitable for our project, too. The dataset can be accessed by this link.

The Problem

In this project, we are trying to accomplish crowd-counting, i.e. counting the number of people that passes through an area. The count of the people passing through an area is crucial information for future event planning or the space design. Especially, overcrowded regions may be dangerous due to the Covid-19 pandemic. In order to avoid overcrowded regions, governments may use this solution for crowd-control. In addition, governments can mark high-risk territories according to the obtained data. Besides, crowd-counting could have an impact on many other areas such as security, advertising, etc.

The Planned Milestones

Until the Progress Report deadline, we aim to preprocess the data in order to get the density map of each image by using the coordinates of the heads in the images that are given in the dataset. Furthermore, we will review the articles of the crowd counting research and acquire the knowledge of Convolutional Neural Networks (CNN) and the PyTorch framework [1, 2]. Along with the preprocess, we will begin to implement the network. After the first demo, we will conclude the implementation and finalize our discussion on the results of the project until the Final report deadline.

References

[1] Y. Zhang, D. Zhou, S. Chen, S. Gao, and Y. Ma, “Single-Image Crowd Counting via Multi-Column Convolutional Neural Network,” 2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2016.

[2] H. Xiong, H. Lu, C. Liu, L. Liu, Z. Cao, and C. Shen, “From Open Set to Closed Set: Counting Objects by Spatial Divide-and-Conquer,” 2019 IEEE/CVF International Conference on Computer Vision (ICCV), 2019.