Roskilde project proposal

counting visitors in TechLab

Mikolaj Patalan s171811@student.dtu.dk
Marcin Zajaczkowski s182552@student.dtu.dk

1. Objective of the project

   Aim of the project is to provide reliable information about number of visitors that will come by Techlab exhibition platform at Roskilde Festival. The system should measure and visualize data about visitors that can be used during and after the festival.

2. Project specification

   The core assumption of the system is to identify individual persons in order to eliminate counting same person multiple times and to provide accurate number of visitors at Techlab. The proposed project will consist of camera system that will capture and analyze images to identify individuals at images. The algorithm will use deep learning methods to identify characteristic features of individual persons and compare them with already seen people. Important aspect of the project is care about privacy of visitors, since data will have to be stored over the period of Roskilde festival. The algorithm will be created in a way that it will be impossible to link particular person data with captured images. One of the objectives is to have a system that works in real time, so it will be possible to visualize data continuously. Also, the system shouldn't need constant supervision.

3. Implementation

   In order to catch images of people crossing Techlab, we consider designing a vision system that consists of either one 360^0 camera or 4 standard cameras facing different directions. In both cases, camera(s) will stream the video(s) to Nvidia Jetson that is capable of handling all the computations. We plan to pre-process each frame and apply a deep neural network on it. That would result in converting a human face into a distinct vector of 128 values that describes a face. Vectors consisting of highly similar values would be recognized as ones describing the same face. This approach rules out the need to store real images of human faces. Simple statistics would be shown: visitors in previous hours and peak hours.

4. Budget

RICOH theta V / 4x LOGITECH c920	2500 kr
Usb cables	200 kr
Mechanical parts and 3D prints	300 kr

   The rest of devices and parts will come from our own resources.