Project description AI master thesis

Project name	Image Recognition on Building Facades
Description	The municipality is responsible for ensuring that owners and users of buildings ensure that the fire safety of their buildings complies with the legislation and regulations. Fire safety inspections are therefore a huge task for the municipality. The Fire Risk Profiles project aims to prioritize the workload of the fire safety inspectors based on the chance of an incident, the chance that elements in the building are not complying with rules and regulations, and the potential effect. An interesting data source are the facades of buildings which can tell us something about the chance of an incident, chance an observation and the potential effect of a fire, e.g. how quickly a fire can spread. In this master thesis research you will use pictures of facades to extract all kinds of interesting variables in relation to fire safety. The desired output of this project would be a set of variables that describe properties of a specific facades which later could be used in the overall project of Fire Risk Profiles to prioritize the work of inspectors. Example information that could be extracted from images of the facades could be the amount of glass, amount of stone, number of cramp-irons, cavity properties or prefab/not prefab. The condition of the materials used is another potential output that could be used for further fire safety analysis. The most important dataset is the one with the panoramic images which is publicly available via data.amsterdam.nl. Last year a student worked on recognition of windows and doors in facades based on these same panoramic images. Furthermore, six groups of students of the master Information Studies at the UvA are already working on the overall Fire Risk Profiles project - some groups will also focus on computer vision and more specific facades. This provides you a good starting point for your research.
Work environment	The intern will work in the team Data Science & Analyse Ruimte at the Onderzoek, Informatie & Statistiek department of the municipality. This team works mainly on Public Space research projects, however some exceptions with e.g. the Fire Risk Profiles project. Our office is at the Weesperstraat 113, however due to Covid-19 we will work a lot from home and communicate via [redacted]
Expectations	The results of this project should be directly applicable and relevant to the overall Fire Risk Profiles project as described with as output variables that can be used as input for the prioritizing model. In addition to the delivery of useful predictive models, relevant results also include byproducts of the whole data analysis/processing pipeline that could be turned into insightful reports. Supervision will be shared between the academic institution (UvA/VU/…) and data scientists/analysts at the City of Amsterdam.