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# Practices on Visual Computing I - Template for Project Idea

## Project Name

One-shot Image Segmentation Model for Panoramic Street View Images

### Description

The project is to develop a one-shot image segmentation method for panoramic street view images using generative models. Panoramic images have advantages for street-level and building-level studies compared to flat images due to their wide field of view and underlying coordinate information. Most current image segmentation models and datasets, however, only focus on flat images. Directly apply the models and datasets for flat images to panoramic images could decrease the performance due to the distortion of panoramic images.

Few-shot segmentation method can segment objects or parts of the objects given only a few annotated images, which provides an opportunity for panoramic image segmentation research previously limited by the scarcity of annotated data. Recent advancements of one-shot image segmentation for flat images have been achieved by using generative models. In our best knowledge, few extant literatures focus on one-shot image segmentation for panoramic images instead. Owing to this research gap, in this project, we want to focus on one-shot image segmentation method for panoramic street view images. This project could be significantly beneficial to lots of urban environment research such as building damage estimation or built environment assessment.

Students are expected to use multiple algorithms and libraries, train multiple models, and report on comparative performance of each one.

Performance of the models should be described by their accuracy and recall scores, but it should also include a time performance factor in the application of the model.

Usage of open source programming languages and libraries are encouraged.

### Datasets

Students can use a Google Street View imagery dataset containing street view images with annotations of some parts of buildings. Usage of other public datasets are encouraged as well.

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### Contributor of the Project Idea

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