Rooftop Recognition for Solar Energy Potential

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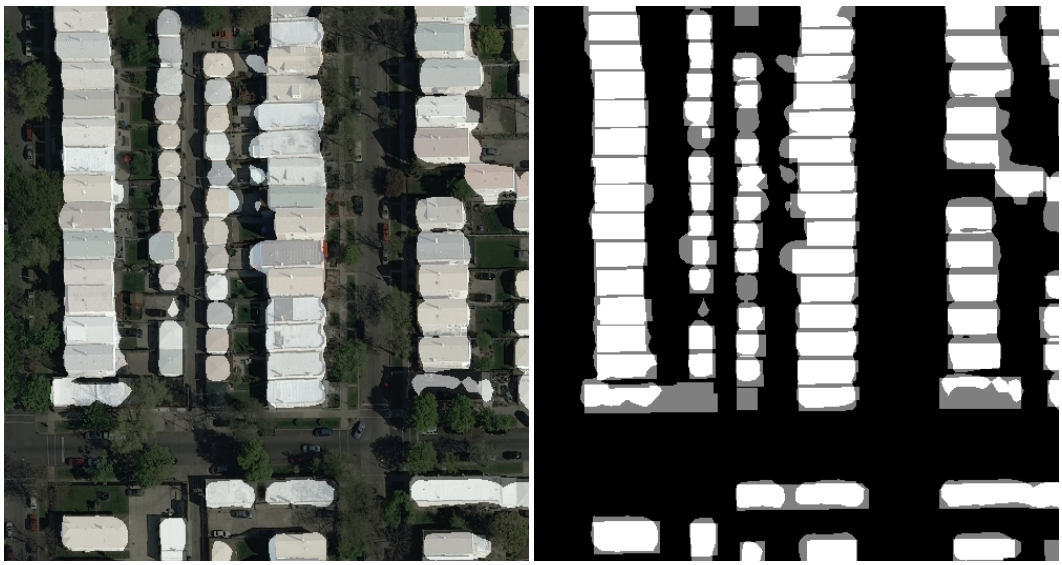

Goal

The aim of this project is to detect the rooftop of buildings to determine the available area at different locations and to identify the most suitable ones for solar energy application such as solar PV using Neural Networks and satellite imagery.

Summary of Results

A neural net was trained and tested using a dataset which contained the aerial images of five different cities and their corresponding mask. A mask is a binary image where white pixels tell us where are the building rooftops and a black pixel for the rest of the image. A generator function to load a batch of files into the training was needed to handle the whole dataset. The neural net to trained was chosen from the Semantic Segmentation category at Wolfram Neural Net Repository. *"Ademxapp Model A1 Trained on PASCAL VOC2012 and MS-COCO Data"* net was modify for the specific needs of the dataset and the classes to return. A good correlation between the test images and their rooftops was obtained.

Future Work

- Superpose the solar radiation map for solar thermal or PV applications.
- Calculate the ground area of the rooftops.
- Train with high resolution images and masks of other regions of interest.