Literature review

1. vehicle detection in satellite/aerial images

a. Automated vehicle detection in satellite images using deep learning, 2019

<https://iopscience.iop.org/article/10.1088/1757-899X/610/1/012027/pdf>

b. Vehicle Detection in Satellite Images by Hybrid Deep Convolutional Neural Networks, 2014

<https://ieeexplore.ieee.org/abstract/document/6778050>

c. Deep neural networks-based vehicle detection in satellite images, 2015

<https://ieeexplore.ieee.org/abstract/document/7344954>

d. Segment-before-Detect: Vehicle Detection and Classification through Semantic Segmentation of Aerial Images, 2017

<https://www.mdpi.com/2072-4292/9/4/368/htm>

improved:

e. Vehicle Detection in Satellite Images by Parallel Deep Convolutional Neural Networks, 2013

<https://ieeexplore.ieee.org/abstract/document/6778306>

f. Fast Deep Vehicle Detection in Aerial Images, 2017

<https://ieeexplore.ieee.org/abstract/document/7926624>

g. Learning RoI Transformer for Detecting Oriented Objects in Aerial Images, 2018

<https://arxiv.org/pdf/1812.00155.pdf>

2. traffic monitoring in satellite/aerial images

a. Vehicle Detection in Very High Resolution Satellite Images of City Areas, 2010

<https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5440956>

b. Traffic Monitoring using Very High Resolution Satellite Imagery, 2009

<http://docserver.ingentaconnect.com/deliver/connect/asprs/00991112/v75n7/s6.pdf?expires=1594696603&id=0000&titleid=72010567&checksum=51125B2EB15364619DA935BF93734399>

3. road segmentation in satellite/aerial images

a. Semi-Automated Road Detection From High Resolution Satellite Images by Directional Morphological Enhancement and Segmentation Techniques, 2012

<https://ieeexplore.ieee.org/abstract/document/6227311>

b. Automatic Road Extraction from High Resolution Satellite Image using Adaptive Global Thresholding and Morphological Operations, 2012

<https://link.springer.com/article/10.1007/s12524-012-0241-4>

c. The line segment match method for extracting road network from high-resolution satellite images, 2002

<https://ieeexplore.ieee.org/abstract/document/992826>

4. estimating AADT with satellite images

a. Truck traffic monitoring with satellite images

link: <https://www.ml.cmu.edu/research/dap-papers/f18/dap-kaack-lynn.pdf>

use an object detection network to count trucks in satellite images and predict AADTT (Annual Average Daily Truck Traffic)

\* assume a 4-lane highway

b. Estimating annual average daily traffic and transport emissions for a national road network: A bottom-up methodology for both nationally-aggregated and spatially-disaggregated results

link: <https://www.sciencedirect.com/science/article/pii/S0966692316307244>

The typical traffic data collection is based on traffic surveys and ground-based traffic counters, which is costly and time-consuming. An affordable approach was proposed and wildly discussed since satellite images become cheaper and with higher resolution over time: using vehicle detection networks for a snapshot of roads in bird-eye view to predicting traffic flows associated with geographical data.

In the past years, many works on vehicle detection in satellite or aerial images using deep convolutional neural networks have been done[1a, 1b, 1c, 1d]. Some studies have proposed approaches to improve detection networks' performance in terms of processing speed[1e, 1f] and precision[1g]. Instead of manually collected geographical information, road features can also be extracted automatically from satellite images[3a, 3b, 3c]. Combining these detection techniques leads to an efficient and reliable approach to monitoring traffic in high-resolution satellite images[2a, 2b]. [4b] introduced a bottom-up approach to estimate AADT. [4a] use an object detection network to count trucks in satellite images and predict AADTT (Annual Average Daily Truck Traffic).