

GLOSSARY DOCUMENT

Version	Editor
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2.0	Hy Dang
3.0	Hy Dang

Methods	Description	Link to Project
<u>MapBox APIs</u>	Mapbox APIs are divided into four distinct <i>services</i> : Maps , Navigation , Search , and Accounts . Each of these services has its own overview page in this documentation. These overview pages are divided into the individual <i>APIs</i> that make up the service. The documentation for each API is structured by <i>endpoints</i> . An endpoint is a specific method within an API that performs one action and is located at a specific URL.	<ul style="list-style-type: none">• Use MapBox APIs and a client-provided token to extract map images from the DFW region.• Result in 200-300k images to train and test the machine learning model.
<u>PyTorch</u>	Deep Learning Framework Learning Resources: <ul style="list-style-type: none">• <u>PyTorch Learning - Youtube</u>	<ul style="list-style-type: none">• To train the model to classify truck

<p><u>Google BigQuery</u></p>	<p>BigQuery is a serverless, highly scalable, and cost-effective data warehouse designed to help you turn big data into informed business decisions</p>	<ul style="list-style-type: none">• The resulting dataset after the training model is fed into the client's Google BigQuery data warehouse with the appropriate data types.• Density rankings are applied to sections of DFW using this dataset and saved as another dataset in Google BigQuery
<p><u>Kepler.gl</u></p>	<p><u>Kepler.gl</u> is a powerful web-based geospatial data analysis tool. Built on a high-performance rendering engine and designed for large-scale data sets.</p>	<ul style="list-style-type: none">• Both datasets in Google BigQuery will be evaluated by the client by feeding into a modified open source GIS software and comparing against well-known industrial areas
<p><u>Jupyter notebook</u></p>	<p><u>Jupyter</u> is a non-profit to develop open-source software, open standards, and services for interactive computing across dozens of programming languages</p>	<ul style="list-style-type: none">• Jupyter notebook is the environment we developed and trained our model.

<p><u>API</u></p>	<p><u>API</u> Application Programming Interface. API is software that allows two applications to talk to each other.</p>	<ul style="list-style-type: none">● Our purpose in using an API is to deliver the end product in form of an API to the client so that it is more usable.
<p><u>U-NET Model</u></p>	<p><u>U-NET</u> model is a convolutional network architecture for fast and precise segmentation of images. Up to now, it has outperformed the prior best method (a sliding-window convolutional network) on the ISBI challenge for segmentation of neuronal structures in electron microscopic stacks.</p>	<ul style="list-style-type: none">● U-NET was the model we used initially to create image segmentation from the Mapbox to train our model.
<p><u>Mask R-CNN Model</u></p>	<p>Mask R-CNN is a state-of-the-art model for instance segmentation, developed on top of Faster R-CNN. Faster R-CNN is a region-based convolutional neural network, that returns bounding boxes for each object and its class label with a confidence score.</p>	<ul style="list-style-type: none">● Mask R-CNN was used to better our train model due to its efficiency.

<u>Detection 2</u>	<p>Detectron2 is Facebook AI Research's next-generation library that provides state-of-the-art detection and segmentation algorithms. It is the successor of Detectron and masks-rcnn. It supports a number of computer vision research projects and production applications on Facebook.</p> <p>https://github.com/facebookresearch/detectron2</p>	<ul style="list-style-type: none">• Served as a Deep Learning model for our project
<u>COCO</u>	<p>the COCO format defines exactly how your annotations (bounding boxes, object classes, etc) and image metadata (like height, width, image sources, etc) are stored on disk.</p>	<ul style="list-style-type: none">• To run the Detectron2. We need to convert the dataset to COCO format
<u>Labelme</u>	<p>Labelme is a graphical image annotation tool inspired by http://labelme.csail.mit.edu.</p> <p>It is written in Python and uses Qt for its graphical interface.</p>	<ul style="list-style-type: none">• Labeling the images for training step