SPOTHOLE BACKEND SERVICES

Main Neural Network

Darkflow Architechture (Darknet + Tensorflow) pretrained on COCO dataset to form the main neural network for detection

Update learning rate and batch size after regular checks to train continually. Also fine tuned by freezing layers

Divide the video into frames with python and OpeCV (CV2 package & video capture module)

Video

OBJECT DETECTION

Receive geotagged images/videos from source

Store the image/video and send the stored data to the cloud server using opensource API's (e.g. Filepond) /SFTP/SSH client

Is the data, image or video?

Image

Deep Learning engine with Darknet in combination with Tensorflow Object Detection API

The Computional system on the cloud will process the data to detect the Pothole(s).

Patch

Setup the configurations(.cfg), batchsize, filters, classes and region for the main neural net.

Create the annotations in PASCAL VOC format for feeding to the network. Using tools like FastAnnotation/LabelImg/internal tool created

Load the labels, annotations and images dataset on the network

SPOTHOLE CORE

Object Detection Service

CRUD Operations

FLASK CONTROLLER

Backend Services

MySQL

Geonear Queries

SQL

INPUT

Authorization Control

OUTPUT (JSON)

Email Service

SMTP Library

email