ICG x CDIS

Open-Intelligence for Poverty Prediction

Project Status Report

Contents

- Night-time luminosity extraction
- OpenStreetMap features extraction
- Residential region identification
- Deep Features
- OSM feature extraction
- Updated Pipeline
- Remarks

Night-time luminosity extraction

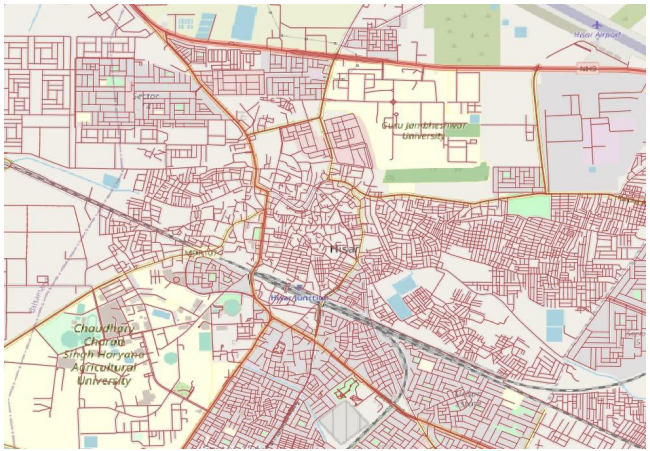
Latitude	Longitude	Avg. Luminosity
29.79375	74.4770833	230
29.789583333	74.4770833	231

Granularity: 414 m
Data as on 8th Sept

Source of NTL data: ***VIIRS NASA*** *satellite*
Software used for extraction of Luminosity: ***Qgis***

Open Street Map (OSM) Features extraction

- **Road Features** (types of roads, length of each road types, distance of clusters' centroids to the nearest road).

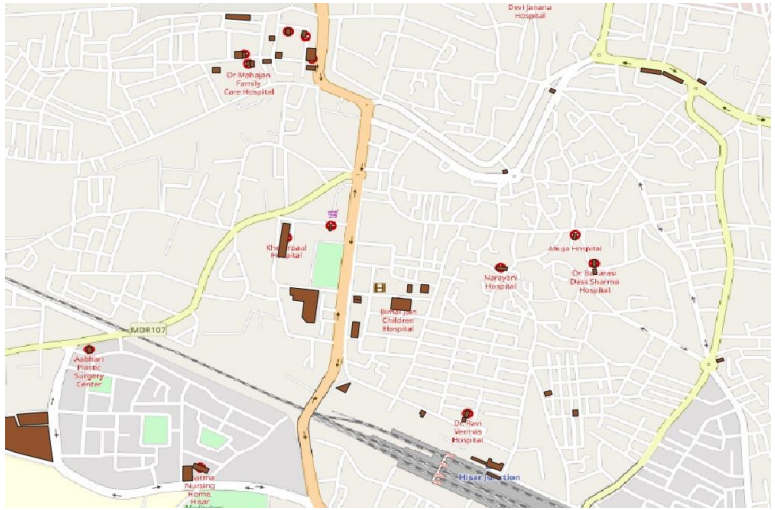


fclass	residential/service/tertiary
name	Gandhi Road
ref	NULL
oneway	F/B
maxspeed	0
bridge	T/F
tunnel	T/F

Each of this entries is mapped to an **`osm_id`** which can be mapped to a **`lat-long`**

Open Street Map (OSM) Features extraction

- **Point of Interest** (count of each type of point-of-interests such as hospitals, schools, supermarkets, public attractions)



Category	Automotive/Residential/ Agricultural/ Industrial/etc.
Name	Level Crossing/ Fuel: Petrol Pump/ Fuel:kalsi/Hospitals
Lat	29.0898
Long	74.0467

Each of this entries is mapped to an **`osm_id`** which can be mapped to a **`lat-long`**

Open Street Map (OSM) Features extraction

Similar features :

- **Buildings**
  (types of buildings: area of buildings, mean distance to clusters)
- **Land Use**
  (types of Land use: parks, forest, commerce, the military, as well as for industrial, residential, recreational)

*OSM Data for **Northern India** was easily available on **geofabrik.de***

*Using the **QGIS Software**, we extracted the OSM Data specific to **Haryana** which could be used for Feature extraction*

Deep Features Extraction

Input_image

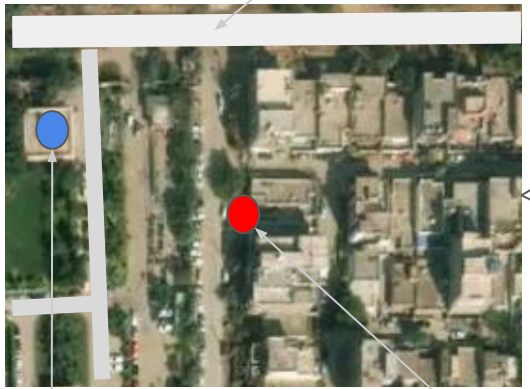
image_patch

Pretrained Model

Vector of shape: (N,)

Deep Features of the patch

Open Street Map (OSM) Features extraction



patch_image

Road_network

buildings of our interest

Centre of the patch

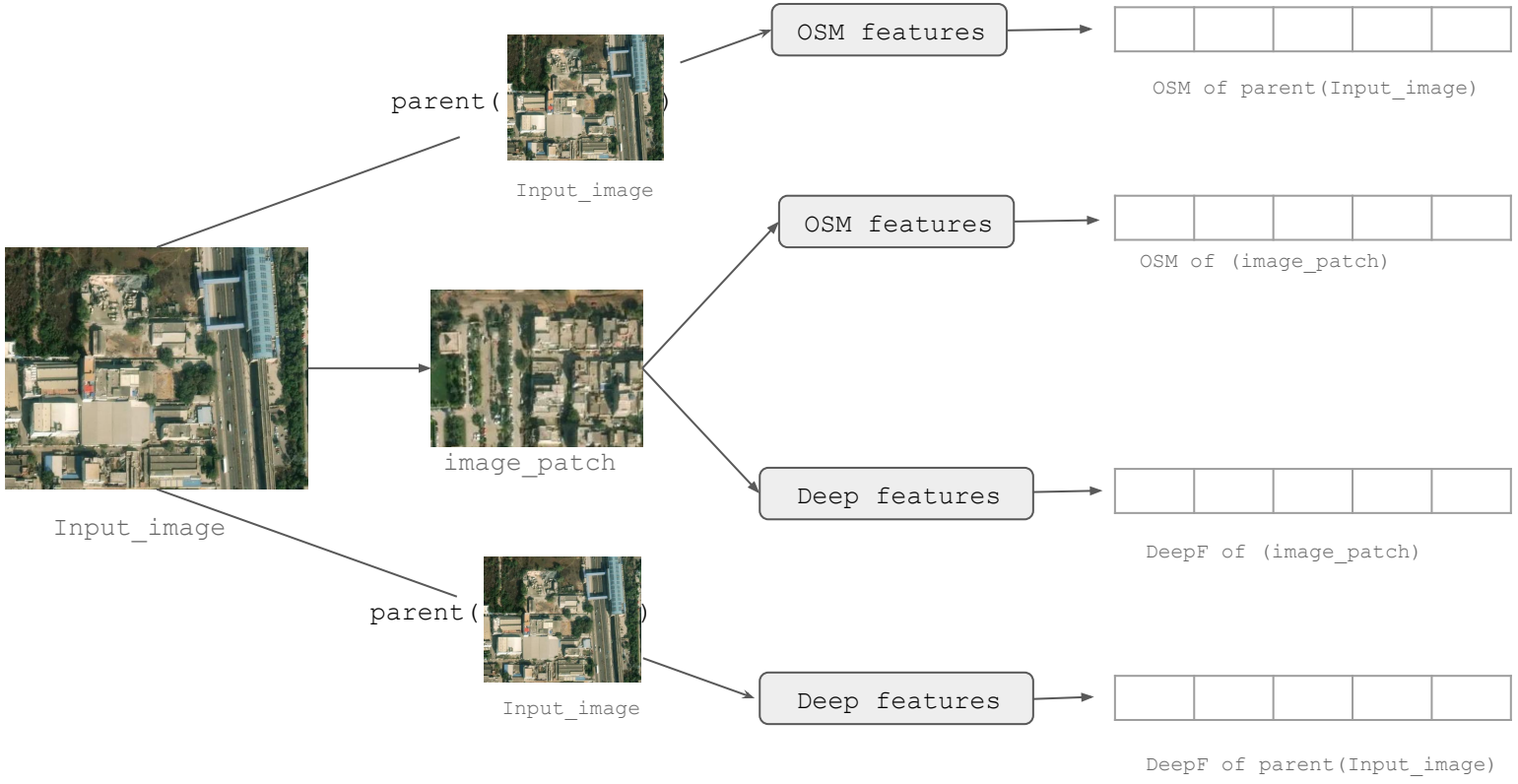
{C}

mean($\sum_{i \in POI} d_{(i,C)}$)

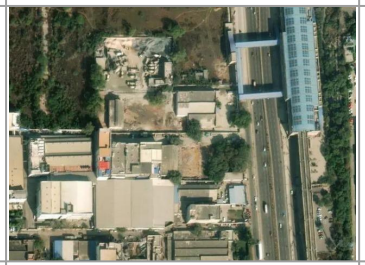
count($\sum_{i \in POI} k_{(i,C)}$)

$d_{(i,C)}$:distance of PoI from the centre of patch

Updated Pipeline



Parent(Input_image)

img_0	img_1	img_2
img_3		img_4
img_5	img_6	img_8

Idea of involving the parent image is to give some weight to those neighbours of patches, near boundaries, which were not in the input image