

> Workflow for global 3D building information mapping

1. Google Earth Engine

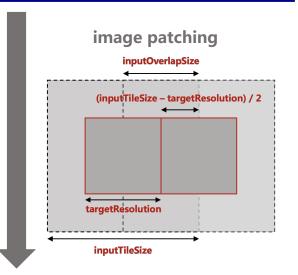
- a. Sentinel-1/2 image
- b. SRTM data



1. Google Earth Engine

a. High Resolution Settlement Layer

Note: The HRSL dataset includes the information of human population at a resolution of 30 m.



3.2 Local machine

a. saved Tensorflow models

3.1 Google Cloud Storage

a. saved Tensorflow models

model loading

2. Google Cloud Storage

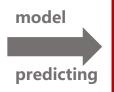
a. patched TFRecord datasets



4. Compute Engine

a. Tensorflow model instances

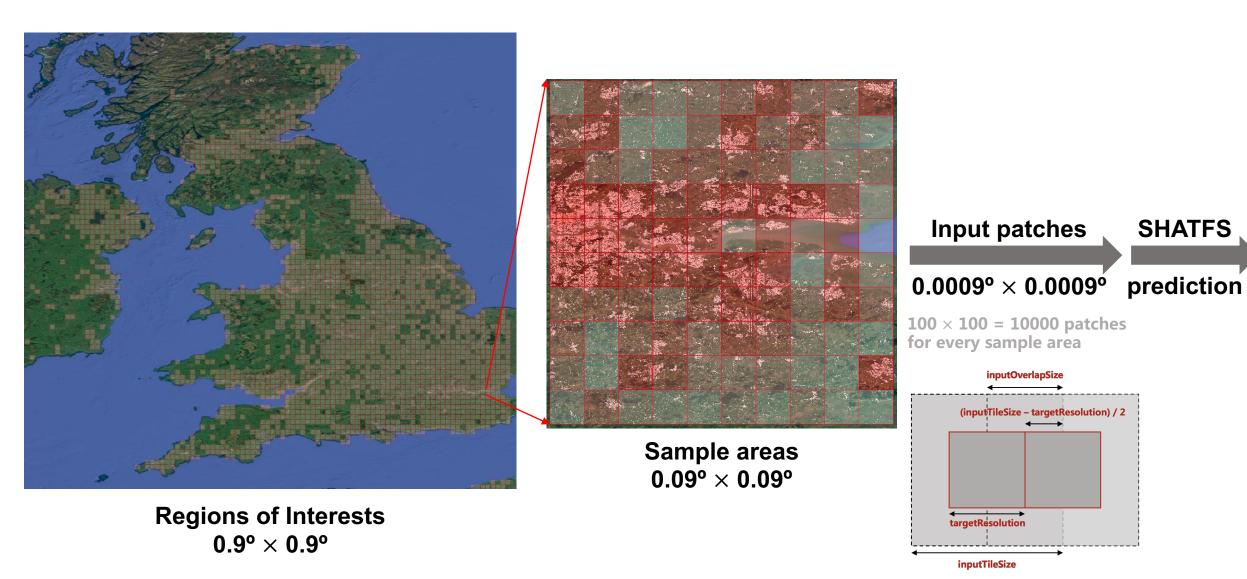
Note: The `Compute Engine` here can be a Google Virtual Machine, a Google Colab notebook or a local machine.



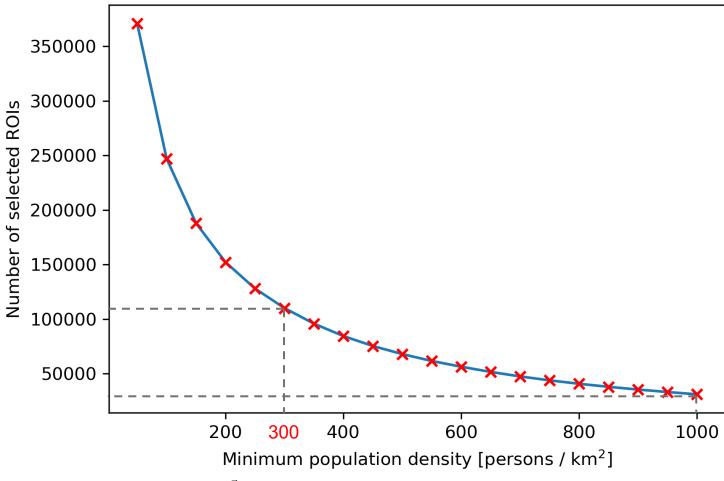
5. Compute Engine

a. Predicted building height and footprint images

Workflow for global 3D building information mapping



Workflow for global 3D building information mapping



 Test the time of CNN inference on UCL's Research Computing Service

 If we want to finish our task in one week, then we need:

~ 20 s / ROI

• 300 persons / km²: ~ 10^5 ROIs (0.9° × 0.9°) • 1000 persons / km²: ~ 3×10^4 ROIs (0.9° × 0.9°)

Reference population data: https://sedac.ciesin.columbia.edu/data/set/gpw-v4-population-density-adjusted-to-2015-unwpp-country-totals-rev11

