# Urban Mapping

Building footprints has become the first product produced by our ML algorithms on a country-wide scale. We've completed all-over-Russia dataset counting more than **50M** buildings. After that we've built the active learning framework for ML models to transfer and apply our technology to new urban domains. Our tests include countries in South America, Western Africa, South Asia and more. We enrich building footprints with **height estimates** predicted by ML or measured by buildings shadows and walls in oblique imagery.

building height

30
4

Total	6124

Image date	**May 2020**
Area size	**5,34 km²**
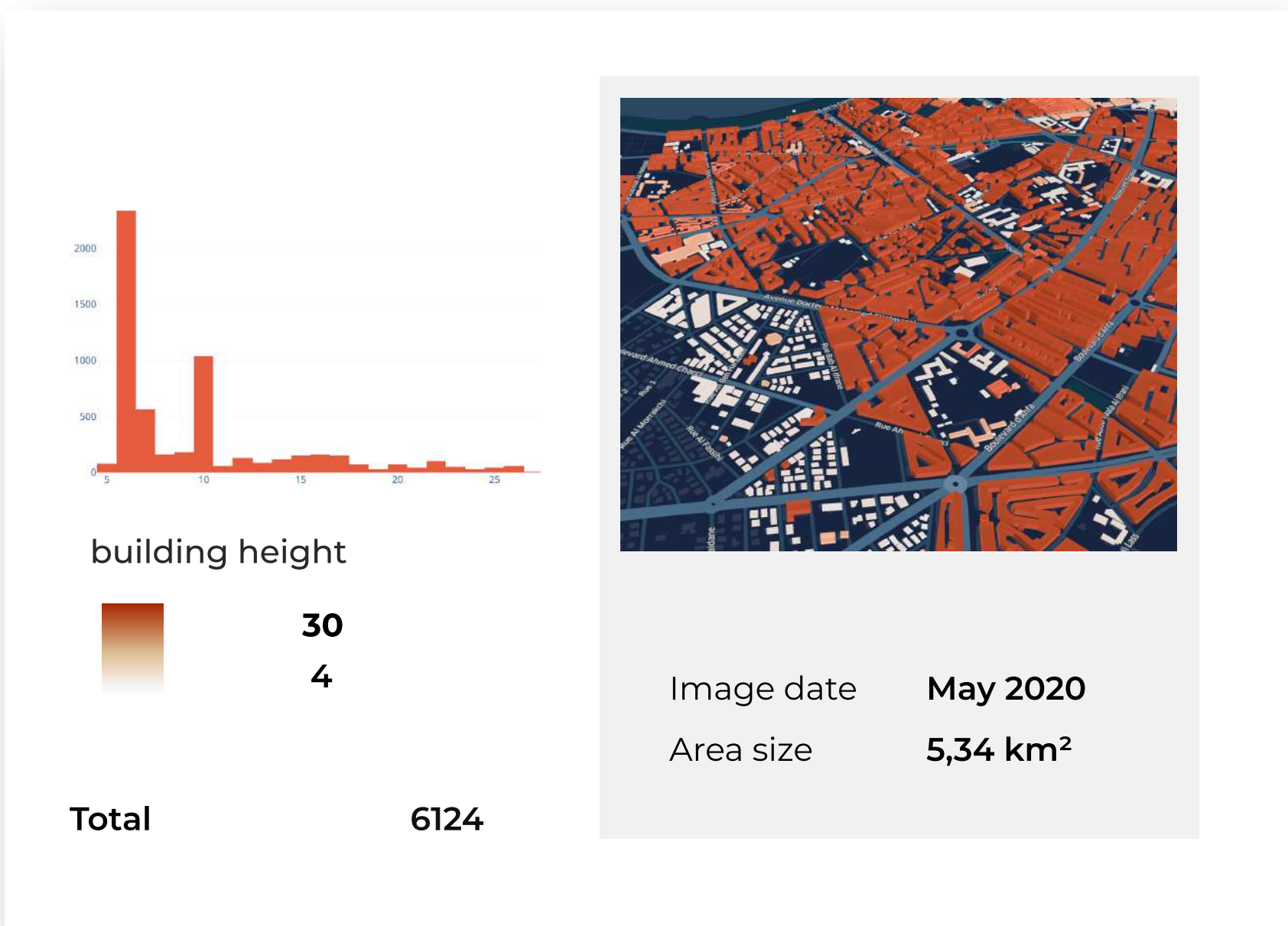
Active learning to transfer to the new urban structures

Active learning framework is applied for transfering our technology to new urban domains. It helps to reduce time for imagery labelling while iteratively increasing the quality.

The framework's composed of the two main blocks.
Deep-learning models for image analysis:

- A segmentation model tuned on a selection of built-up areas

- An instance segmentation model that splits the blocks of densely built buildings into single houses

- A classification model that classifies the detected buildings into residential and non-residential

- A height prediction model for estimating the height of each multistorey building using similarity algorithms or its shadow length

A number of **post-processing** steps:

- Simplification: building footprints (LOD0) are simplified to several common building shapes (rectangle, L-shape, etc.)

- Re-alignment: aligning buildings with the nearest street after their simplification

- Splitting dense building blocks into single features.

- Merging with OpenStreetMap data (currently, we add the landuse class from OSM and optionally substitute the predicted feature with OSM one if their IoU is high enough)

Building & Construction

Images taken from satellites provides historical information and cover larger areas that enables to analyse the context**.**
"Construction Alert" allows to subscribe for a specific sites or for a whole city area to monitor changes all around.
It is considered to be the fastest and the most effective way to detect construction progress and update building footprints datasets.

Check the demo app →

Data access and provisioning

We provide data in any common GIS format
We provide an API for custom-area requests (data is streamed as GeoJSON)

Coordinate system: WGS84

Projection: latitude/longitude

Open data powered by Urban Mapping technology

Check our open datasets on Github project

We have recently completed automatic building mapping for the entire territory of Russia using Mapbox Satellite imagery to provide data for Openstreetmap. Join open project and learn how to benefit from and contribute to open mapping data.

Russia
Mapbox Satellite
27M buildings

GeoAlert

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