BrightEarth - Building, Tree & Road Extraction

LuxCarta

BrightEarth's deep learning algorithms quickly and accurately extract building footprints, tree polygons and road vectors. LuxCarta's real-time extraction of these derived products utilizes sub-meter mono-, stereo- or user-provided imagery.

The Science of Building, Tree & Road Extraction

LuxCarta's automated pipeline for generating 2D/3D building footprints, tree polygons and road vectors is based on experience gained in 30 years of processing derived products from satellite imagery. BrightEarth™ extraction utilizes machine learning algorithms developed inhouse and seeded with LuxCarta training data sets from around the world. Our data scientists have made tremendous breakthroughs with BrightEarth — and the development continues.

Real-time Extraction

LuxCarta provides extraction of building footprints (with an optional z value) for anywhere in the world in real time. Users select their area of interest (AOI), determine their desired output format and the number of credits required and click "Run Process." Files are typically available for download in minutes, or for larger AOIs via FTP links sent via email after processing in the cloud.
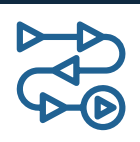
Upload Your Own Imagery

Unlock value and derived products from your investment in high-resolution satellite imagery. Simply upload your imagery via the BrightEarth interface and once it is accepted select the AOI and extraction types required.

2D or 3D Extraction

LuxCarta has created multiple ways to generate height values for buildings and trees, including the use of elevation sources or the length of shadows. While some use cases and environments can be addressed by geospecific 2D footprints, these 3D options provide reasonable height estimates where required.

Accuracy

LuxCarta has perfected its building footprint extraction, including the process of regularization, through years of continuous improvement in its algorithms. As a result, BrightEarth generates a normalized footprint that is snapped at its appropriate location and angle to nearby buildings and roads.

Global Availability

BrightEarth's extraction works anywhere in the world. BrightEarth can extract footprints in favelas in Brazil or cities in Malaysia because LuxCarta has created these data sets since its inception. These verified data sets are used to seed the BrightEarth machine learning algorithms and help achieve accurate results anywhere.

Building Footprint Regularization

Tree Extraction

BrightEarth tree extraction assumes a maximum footprint (i.e., crown) of the tree as a cylinder. 3D tree polygons are defined by one contour and a maximum height. Individual trees or canopies in a forested area may be captured.
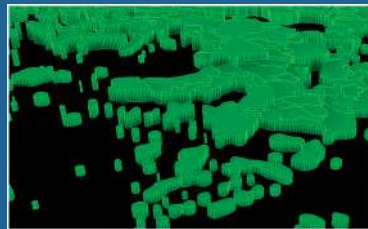
Road Extraction & Data Fusion

Extracted roads have a clean topology with all intersections joined and no duplication. Widths are assigned to each polygon section, as an attribute. While BrightEarth's road detection algorithm is very advanced, some vectors may not be invisible on the image (i.e., hidden by trees or by the overhang of buildings). Where required, BrightEarth utilizes OpenStreetMap's topological skeletons to intelligently join segments.
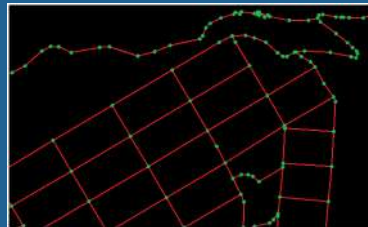
Flexibility in Deployment Models

BrightEarth extraction capabilities are available through public or private cloud implementations. Deep Learning algorithms are multi-threaded to improve speed of optimization and processing in cloud environments. Customer imagery – if desired – can also be uploaded directly through the application.

Supported Industries

	Defense and Homeland Security
	Environment
	Utilities
	Entertainment and Media
	Flight Simulation
	Mining

And more....

About BrightEarth

BrightEarth is LuxCarta's product line created using AI-enhanced production techniques. BrightEarth web services offer high-resolution building, road and tree extraction, 23-class land use/land cover (LULC) and digital terrain model (DTM) creation using a variety of imagery sources in real time. It also incorporates a seamless cloud-free global mosaic, 23-class LULC as well as time-of-day population maps derived from Sentinel-2 imagery at 10m, updated at regular intervals. These innovative products — based on more than 30 years of geospatial and remote sensing expertise — are ready for immediate download or accessible via APIs in support of a system-level integration. There is no place in the world that LuxCarta can't illuminate with BrightEarth.

For more information:

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or visit www.luxcarta.com