

Package ‘geomorphR’

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Type Package

Title Geometric Features for Building Footprints in Sf Objects

Version 0.1.0

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Description Extracts reproducible geometric and urban-morphology descriptors from polygon and multipart polygon building footprints stored as sf objects. Methods include area, perimeter, compactness, shape, bounding-box, topology, convexity, and orientation measures, together with optional building-height, floor-count, gross-floor-area, floor-space-index, coverage, volume, and floor-height metrics derived from explicitly named attribute columns. The resulting sf objects preserve the source attributes and geometry for spatial analysis, visualization, and downstream statistical or machine-learning workflows, with optional future-based parallel processing for larger datasets.

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URL <https://github.com/MakiJota/geomorphR>

BugReports <https://github.com/MakiJota/geomorphR/issues>

Encoding UTF-8

Imports sf, dplyr, future, future.apply, progressr

Suggests testthat (>= 3.0.0)

Config/roxygen2/version 8.1.0

NeedsCompilation no

Repository CRAN

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`extract_geometric_features`*Extract geometric and morphological descriptors from polygonal building footprints*

Description

Computes footprint descriptors and optional building morphology metrics for an sf object containing POLYGON or MULTIPOLYGON geometries.

Usage

```
extract_geometric_features(  
  buildings_sf,  
  verbose = TRUE,  
  use_parallel = FALSE,  
  n_cores = NULL,  
  make_valid = TRUE,  
  height_col = NULL,  
  floors_col = NULL,  
  orientation_col = NULL,  
  gfa_col = NULL,  
  plot_area_col = NULL  
)
```

Arguments

<code>buildings_sf</code>	An sf object with POLYGON or MULTIPOLYGON geometries.
<code>verbose</code>	Logical; print progress messages when TRUE.
<code>use_parallel</code>	Logical; optional future-based parallel computation.
<code>n_cores</code>	Integer or NULL; number of workers used by future.apply.
<code>make_valid</code>	Logical; call <code>sf::st_make_valid()</code> before extraction.
<code>height_col</code>	Character scalar naming building height in source units.
<code>floors_col</code>	Character scalar naming the number of floors/storeys.
<code>orientation_col</code>	Optional character scalar naming building orientation in degrees.
<code>gfa_col</code>	Optional character scalar naming gross floor area.
<code>plot_area_col</code>	Optional character scalar naming plot/parcel area.

Value

An sf object with appended geometry and morphology features.

`validate_morphology_columns`*Validate source columns used by morphology metrics*

Description

Validate source columns used by morphology metrics

Usage

```
validate_morphology_columns(  
  buildings_sf,  
  height_col = NULL,  
  floors_col = NULL,  
  orientation_col = NULL,  
  gfa_col = NULL,  
  plot_area_col = NULL  
)
```

Arguments

<code>buildings_sf</code>	An sf object or data frame containing source columns.
<code>height_col</code>	Character scalar naming building height.
<code>floors_col</code>	Character scalar naming the number of floors/storeys.
<code>orientation_col</code>	Character scalar naming building orientation in degrees.
<code>gfa_col</code>	Character scalar naming gross floor area.
<code>plot_area_col</code>	Character scalar naming plot/parcel area.

Value

A data frame with one row per requested field and validation status.

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