Simply Business

Property insurance risk assessment: using public data to estimate building features that affect insurance value

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OVERVIEW

For estimating premiums landlord and house insurance uses risk factors such as:

- size of the property,
- number of rooms and bathrooms,
- age of constructions,
- wall and roof type,
- flood/fire assessments
- type and safety level of the surrounded area (urban, rural)

The ability to estimate some of these factors from publicly available images will increase the accuracy of the insurance premiums we estimate.

The goal of the project is to create a number of models (such as neural networks) that, as input, use known building characteristics combined with visual features extracted from the forefront image to predict the property attributes. This will help us to automate the process of claims risk evaluation.

GOALS

1. Using the publicly available data to estimate the property attributes such as number of bedrooms, square footage, number of bathrooms and type if property (flat, terraced house, semi-detached, detached house)
2. Using the satellite and image data (e.g. google maps) estimate the the construction characteristics of the property (type of roof, type of windows)
3. Select models that give the best accuracy and explain why you think the approach you took gave the best performance.

Datasets

Dataset will be created from Google Maps showing UK forefront property images with attributes from Zoopla (will be supplied later in the year). This dataset should be split to create both training and test populations.

Reference

1. House price estimation from visual and textual features https://arxiv.org/pdf/1609.08399.pdf
2. HM Land Registry Open Data: https://landregistry.data.gov.uk/app/ppd/
3. Example of dataset without the images: https://www.openml.org/search?type=data&sort=runs&id=41211&status=active
4. Take a Look Around: Using Street View and Satellite Images to Estimate House Prices https://arxiv.org/pdf/1807.07155.pdf
5. Google Street View Image API: https://pypi.org/project/google-streetview/
6. Example of USA california housing database with images :https://www.kaggle.com/code/amir22010/house-price-estimation-from-image-and-text-feature/data
7. UKBuildings is a spatial property database of building characteristics: https://www.verisk.com/en-gb/3d-visual-intelligence/products/ukbuildings/