Datasets

September 29, 2020

1 Introduction

Most existing floor plan datasets consist of rasterized floor plan images from residential buildings and residential buildings generally follow strict conventions, such as rectangular shapes and standardized layouts. The result is that these datasets only contain a subset of the variation that can be expected across all types of buildings. Zeng et al. [19] begin to address the lack of variation by adding 18 unconventional residential floor plan images with irregular shapes and non-uniform wall thicknesses to the Rent3D [11], creating their R3D dataset [19]. The generalizability of existing methods and datasets are questioned by Dodge et al. [8] who finds that models trained on one dataset perform poorly on another. Combining the Japanese R-FP [8] dataset with the European CVC-FP dataset [6] proves to significantly improved performance, suggesting that current methods are severely limited lack of variation and size of current datasets. Table 1 presents an overview of the major floor plan datasets and databases. Note that in many cases users of the datasets select a subset, mixed, and provide their own labels for the data. The labels for the datasets varies greatly from non in case of LIFULL Home's database to bounding boxes and pixel level annotations with CVC-FP [6] or Rent3D [11].

Name (Users)	Type	Size
LIFULL Home's ([19, 18, 12, 8])	Image	5M+
BRIDGE [9]	Image	13,000
CubiCasa5K [10]	Image	5,000
Plans Maisons [13] ([4, 5, 3, 1, 2])	Images	1,000+
ROBIN [16] ([17])	Image	510
Rent3D [11] ([19])	Image	215
SESYD [7] ([15])	Image	200
CVC-FP [6] ([8])	Image	122
FPLAN-POLY [14]	Vector	42

Table 1: The results of the generalizing test performed on the primary test set, the secondary test set and the two datasets combined. Vector, Graph, and Image

2 The Repository of Unique Buildings

We contribute to the diversity of publicly available floor plans by making the Repository of Unique Buildings (RUB) available for research in floor plan analysis. The dataset consists of floor plans from large public buildings, currently two universities and a concert hall. With this dataset we also address another problem of current dataset, the lack of vectorized floor plan representations. In order to aid the development of and comparison with alternative methods relying on vector-based representations we provide the source CAD files as well as both rasterized and vectorized representations. The dataset, at this point, consists of 81 seperate floor plans, ranging in scale from small residential size buildings

to large complexes. The content of the RUB dataset is illustrated in Figure 1, where the majority of public datasets consist exclusivly of the image dataset.

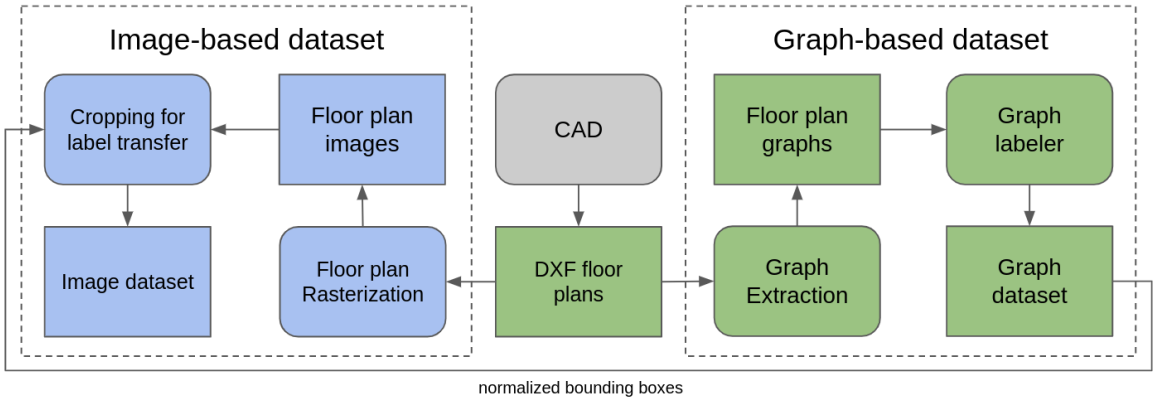

Figure 1: The content of the Repository of Unique Buildings dataset. It consists of tools (rounded rectangles) and data (rectangles) that supports both rasterized (blue) and vector-based methods (green).

3 Datasets

CVC-FP The "Database for structural floor plan analysis" by Heras et al. [6] consists of 122 scanned floor plan documents from four categories determined by origin and style. The floor plans have been annotated using the publicly available SGT-tool. This dataset is used for evaluation by Dodge et al. [8].

SESYD The "Systems Evaluation SYnthetic Documents" database by Delalandre et al. [7] is synthetically generated and consist of 200 floor plan images. The floor plans are generated by placing symbols on a background according to constraints appropriate to the particular domain. This dataset is used by Sharma et al. [15].

CubiCasa5K Kalervo et al. [10] presents a large floor plan image dataset containing 5,000 samples with more than 80 annotated object categories. It is published together with their multi-task convolutional neural network for recovering the necessary information from rasterized floorplan images for creating virtual 3D tours of real estate.

ROBIN The Repository Of BuildIng plaNs dataset presented by Sharma et al. [16] contains 510 real world floor plan images across three broad categories. Along with the floor plans are corresponding hand-drawn sketches that are used by Sharma et al. [17] as a medium for querying and retrieving floor plans using sketches.

Plans Maisons Macé et al. [13] was the first to label and use a collection of french floor plan images available online. The same source has since been used by Heras et al. [5, 4] and Ahmed et al. [3, 1, 2].

Rent3D Liu et al. [11] has scraped 215 apartments from a London-based rental site for floor plans and indoor pictures in order to create the *Rent3D* dataset. They annotate room outline and room type as well as the position of doors and windows. Only a small fraction of rooms have shapes that diverge from the typical rectangular shape. Zeng et al. [19] add 18 unconventional floor plan images to

the dataset and produce pixel level annotations of walls, doors, and rooms using Photoshop for their R3D dataset.

LIFULL Home's The *LIFULL Home's* dataset contains information for more than 5 million Japanese apartments. The information includes rent, area, location, floor plans, indoor pictures, and more. "LIFULL Home's" is the basis several datasets used in floor plan analysis. Yamasaki et al. [18] select 5,000 floor plan images and crowd source the pixel level semantic segmentation. Liu et al. [12] randomly sample 1,000 floor plan images and annotate walls, openings, and object location and type. Zeng et al. [19] take 815 of the 1,000 floor plans used by Liu et al. [12] and perform pixel level semantic annotations, using Photoshop, for their "R2V" dataset. Dodge et al. [8] creates their "R-FP" dataset using 500 floor plan images from "LIFULL Home's" with pixel level annotations of walls.

BRIDGE The *BRIDGE (Building plan Repository for Image Description Generation, and Evaluation)* dataset [9] contains more than 13,000 images of the floor plans with corresponding annotations collected from websites and existing floor plan datasets.

FPLAN-POLY The *FPLAN-POLY* dataset [14] consists of real floorplans which have been vectorized using a raster-to-vector algorithm and a set of clean symbols that are suggested as models for building methods that can analyse vector graphics. The ground-truth that is provided includes the type and location of symbols in the floorplans. A total of 42 floorplan vectorial images are available in dxf format. All symbols are defined using the POLYLINE geometric primitive.

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