

Supplementary Figures

FGE: An Interpretable Geometric Embedding for Floorplan Similarity and Retrieval

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These figures accompany the paper and are not needed to assess it. They draw in full the steps of the method on the pair of floorplans A (plan id 59648) and B (plan id 58990) and show results the paper reports in words. Tables, equations and weight settings refer to the paper.

A = plan 59648 · B = plan 58990 · histograms: all 80,787 floorplans

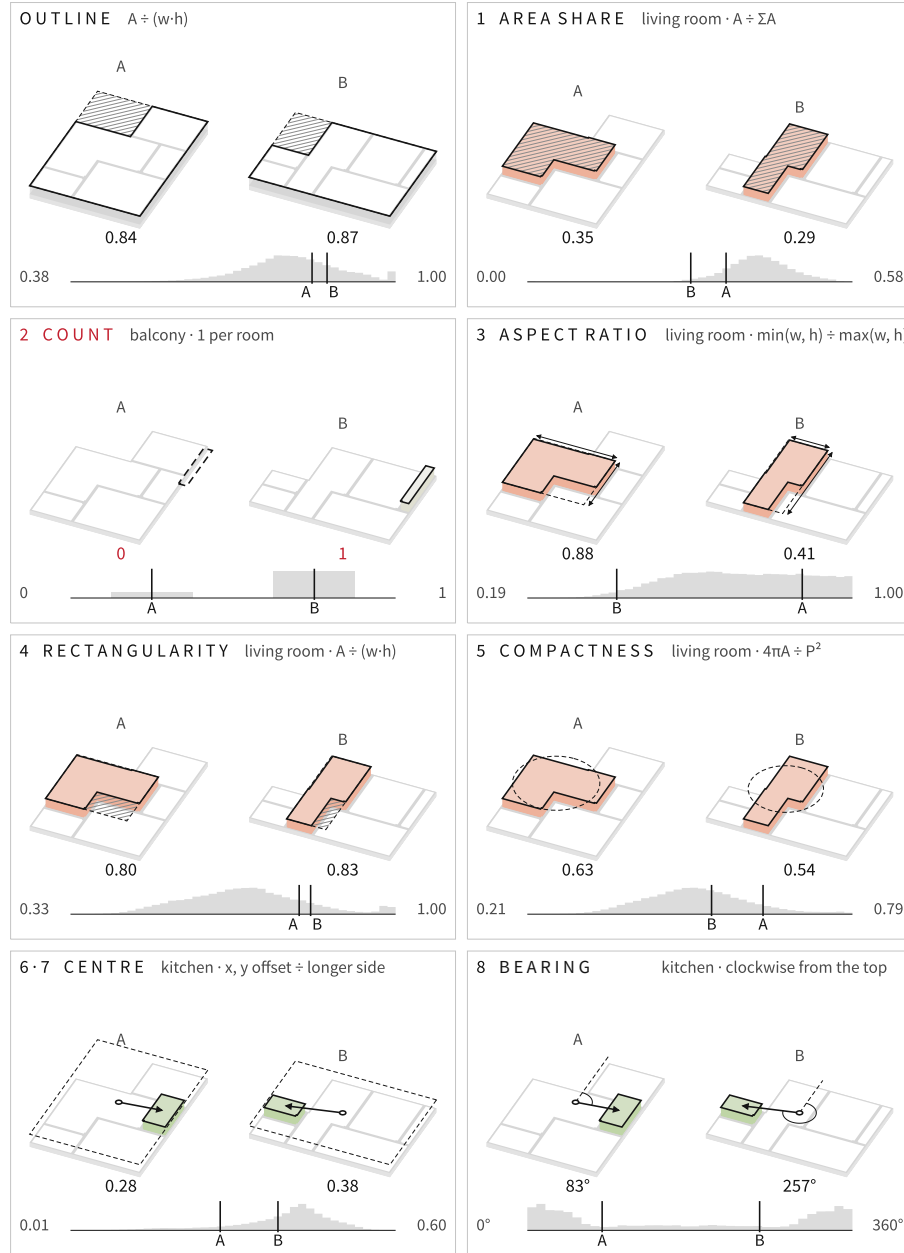
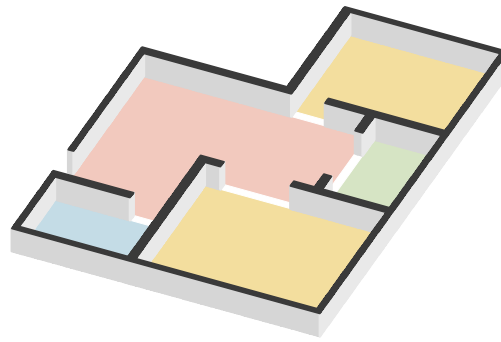


Fig. S1. The eight geometric descriptors of Table 2 drawn on A (plan id 59648) and B (plan id 58990), each on the room where A and B differ most in it, with where A and B fall among all 80,787 floorplans below.



A · PLAN ID: 59648

	SIZE		SHAPE			POSITION		
	area share	count	aspect ratio	rectangularity	compactness	centre x	centre y	bearing
□ outline	1	1	0.72	0.84	0.64	+0.03	+0.06	–
■ living	0.35	1	0.88	0.80	0.63	–0.12	+0.02	↻ 259°
■ bedroom 1	0.28	1	0.86	0.97	0.76	+0.14	+0.31	↻ 156°
■ bedroom 2	0.19	1	0.86	1.00	0.78	+0.18	–0.34	↻ 28°
■ kitchen	0.08	1	0.56	1.00	0.72	+0.28	–0.03	↻ 83°
■ bathroom	0.09	1	0.73	1.00	0.77	–0.22	+0.40	↻ 209°
■ balcony	0	0	0	0	0	0	0	0

Fig. S2. Step 1, the embedding: floorplan A as a matrix, with one row for its outline and each room and one column for each descriptor of Table 2. A has no balcony, so its balcony row is zero. Its other empty rows are not shown.

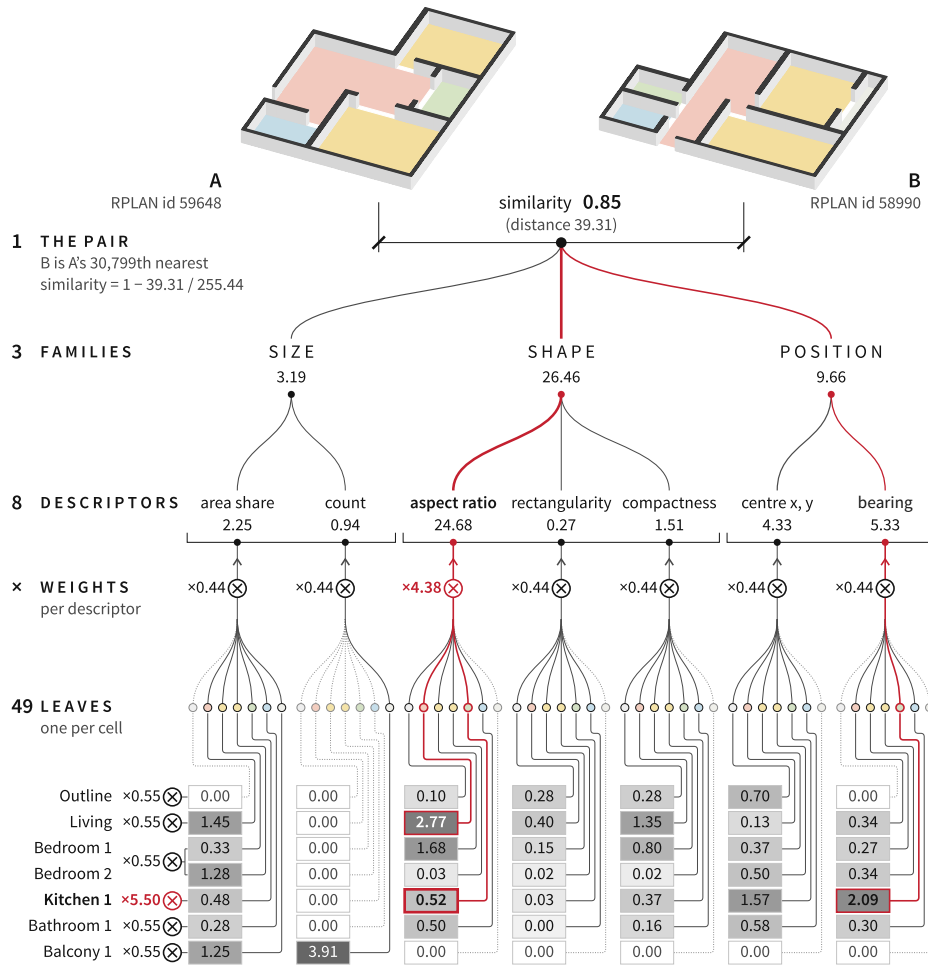


Fig. S3. Step 3, the distance score: Eq. (1) as a tree for A and B, with the weights that stress the kitchen's proportion. Each cell of the difference map, times the weight of its room, is a leaf. The leaves of a descriptor add up and take its weight. The descriptors then add up to the distance. Crimson: the three cells that add most to the distance once weighted.

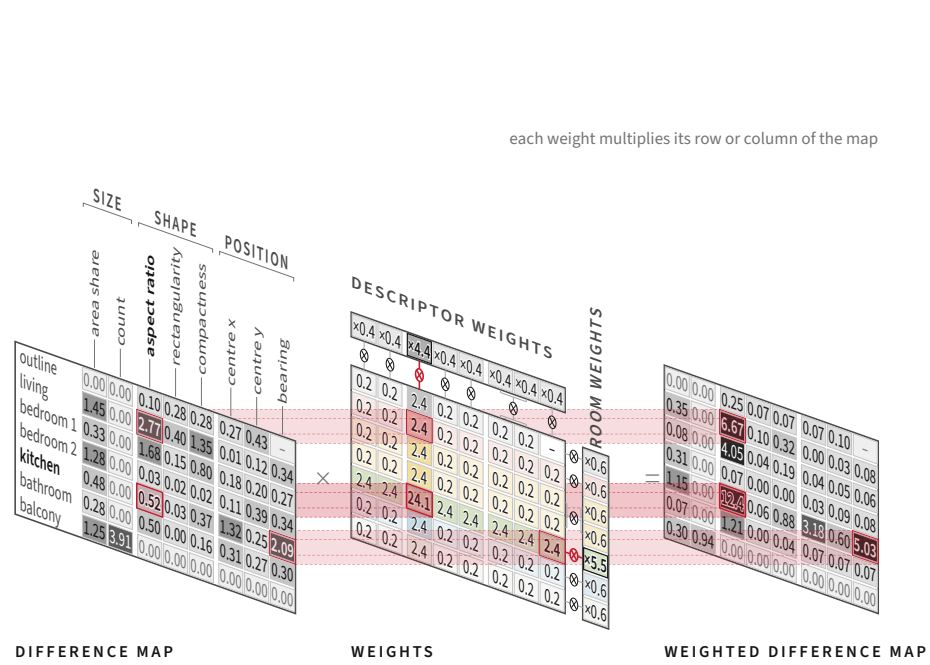


Fig. S4. Step 4, the weights: the difference map of A and B times the weights of setting 5, a kitchen of the same proportion, each weight drawn on its row or column, gives the weighted difference map. The kitchen's aspect ratio, a small cell before (0.52), becomes the largest after (12.43).

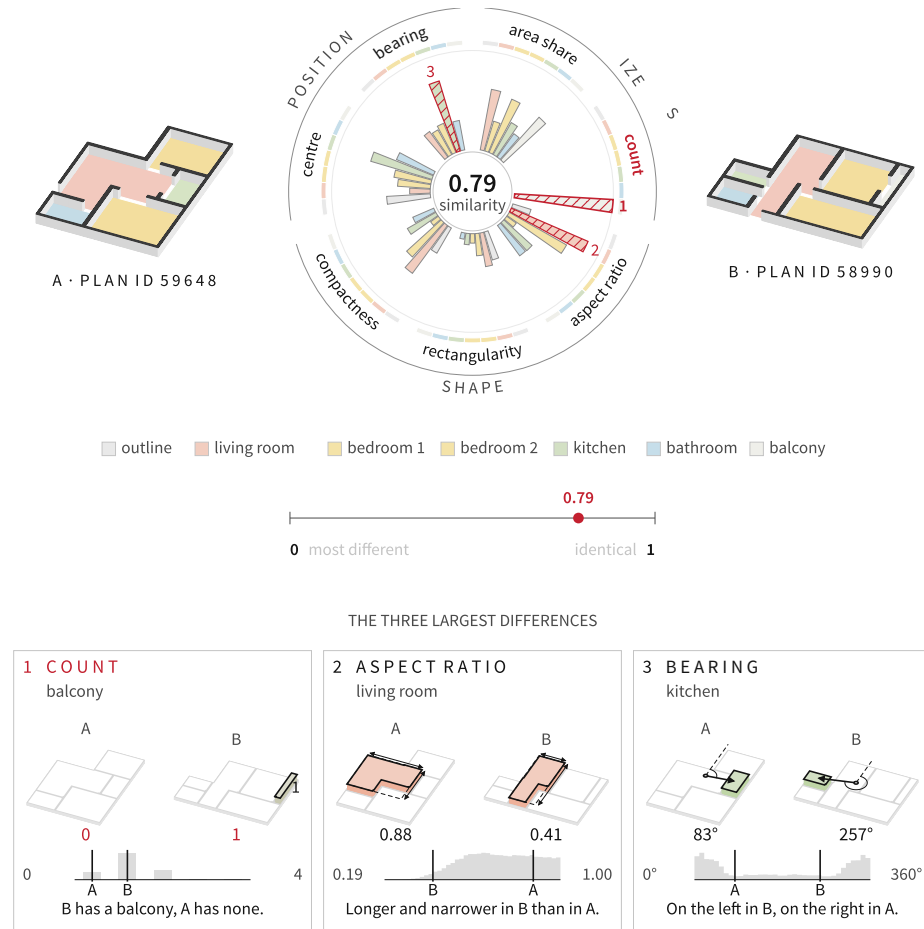
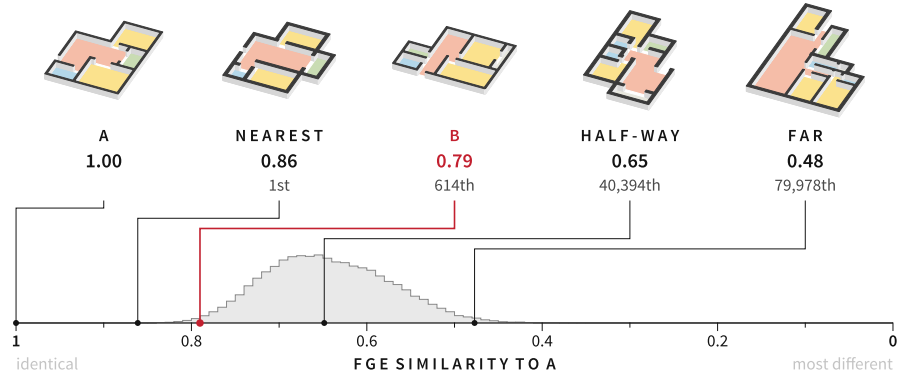


Fig. S5. Reading the difference map of A and B as a rose, one sector per descriptor and one petal per room, the three largest cells hatched and the similarity in the centre. Below, the three largest differences between the plans, explained visually and in words.

01 WEIGHT SETTING 1 · NO WEIGHTS



02 WEIGHT SETTING 5 · KITCHEN PROPORTION FIRST

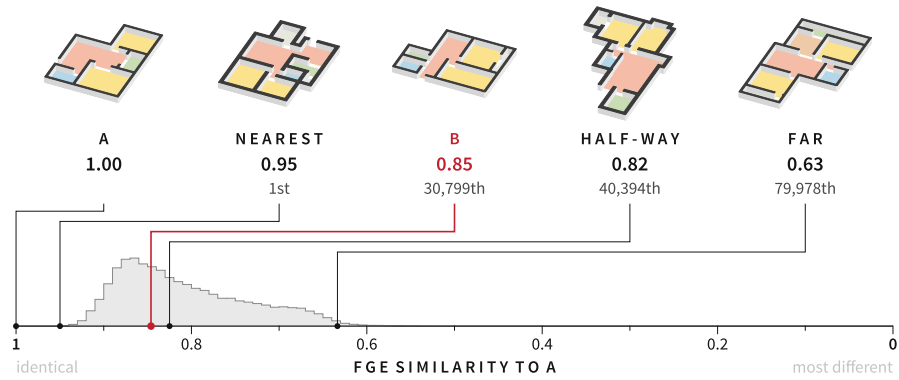


Fig. S6. A's FGE similarity to every other floorplan of RPLAN, with no weights (01) and with setting 5, which prioritises the kitchen's proportion (02). The grey silhouette counts the floorplans at each similarity. Five are drawn at their place with their rank.

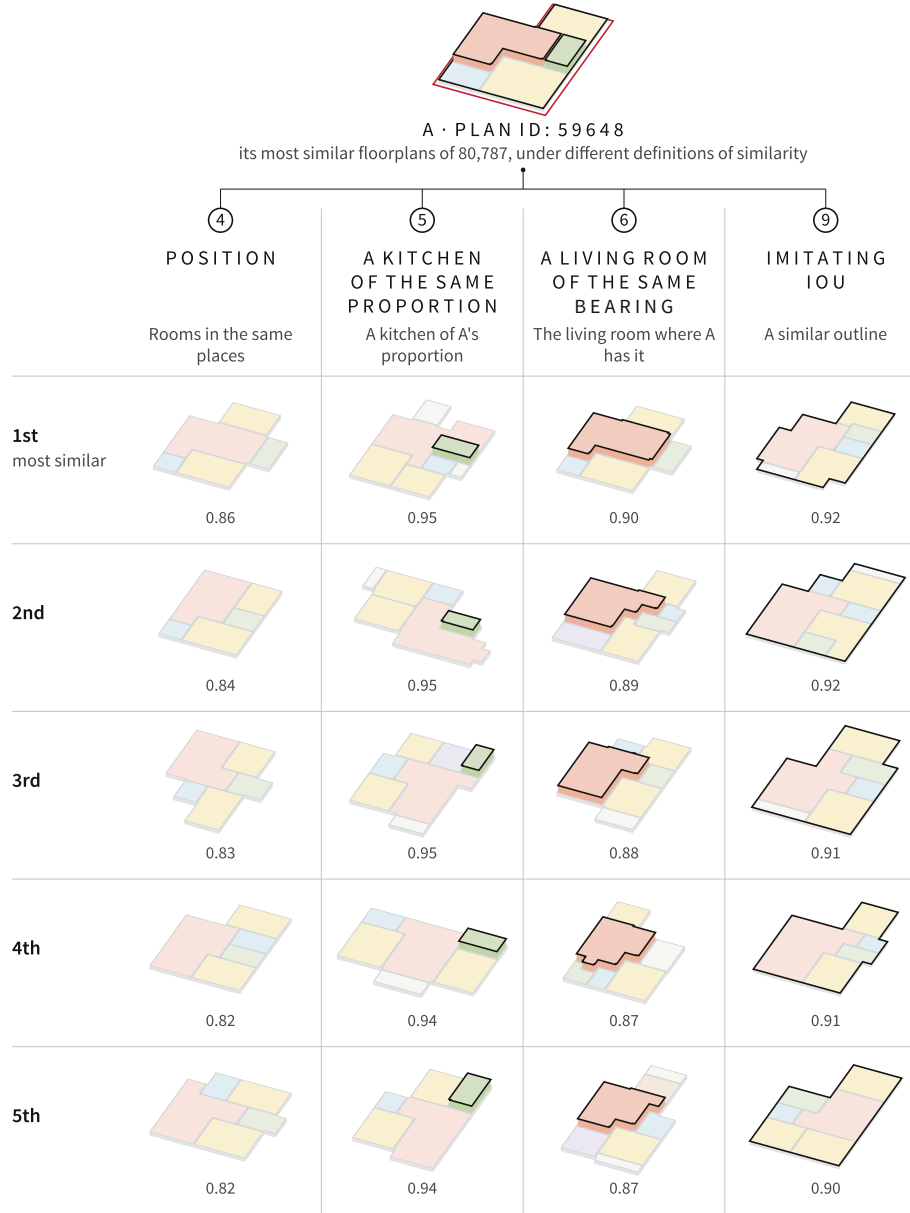


Fig. S7. One floorplan, four definitions of similarity: A's five most similar floorplans of 80,787 under settings 4, 5, 6 and 9 of Table 3, each with its FGE similarity under its own setting.

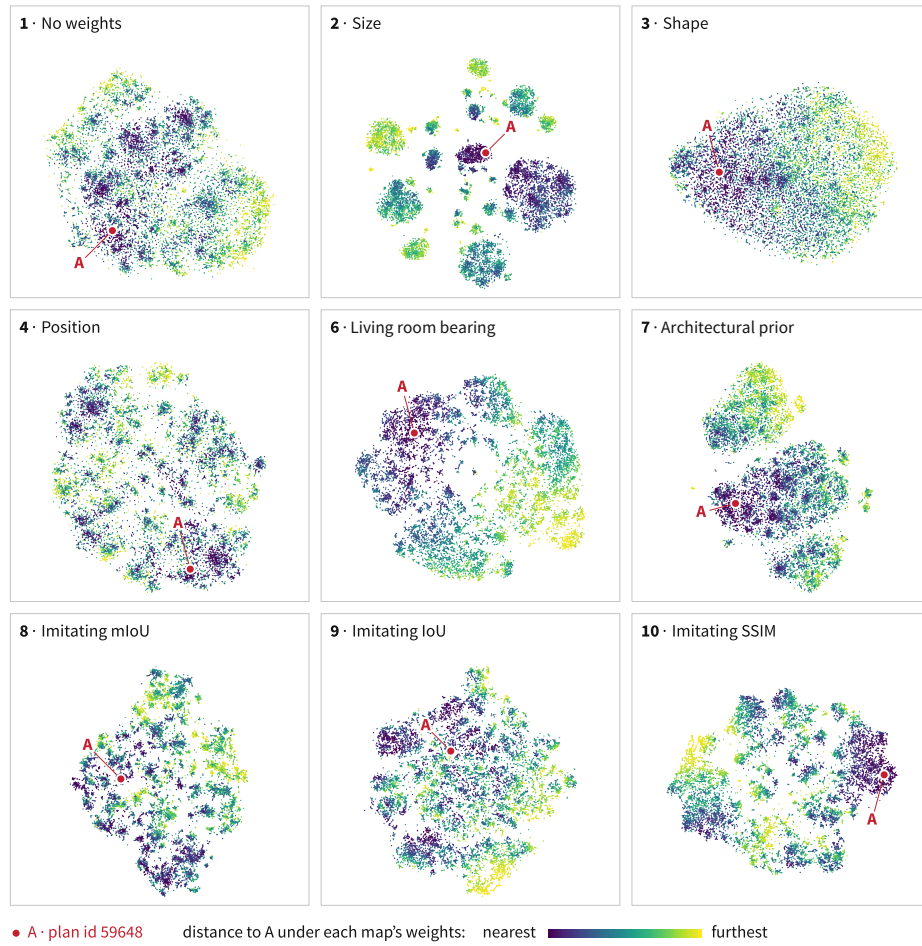


Fig. S8. The corpus similarity map under the nine other weight settings of Table 3, each dot shaded by its distance to A.

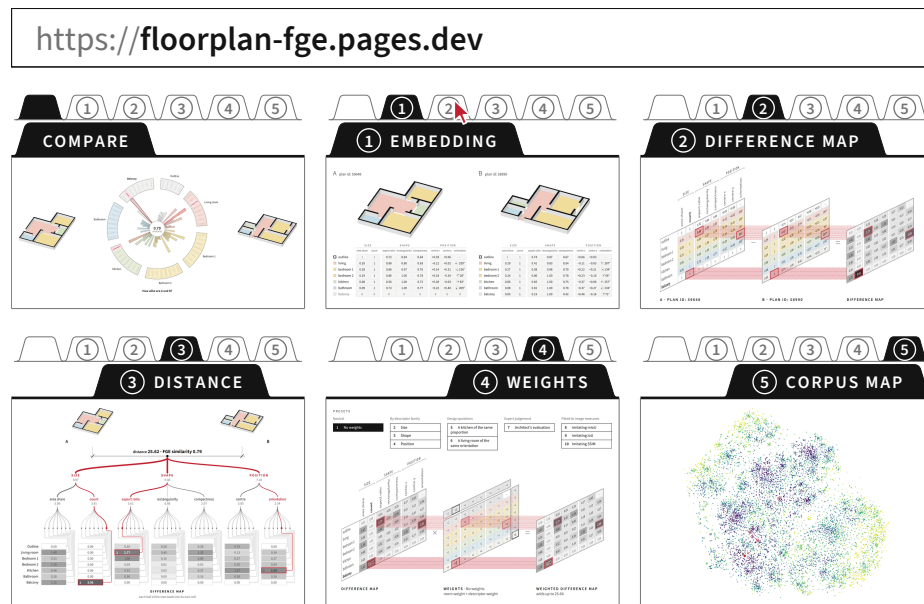


Fig. S9. The interactive explorer, <https://floorplan-fge.pages.dev>: two floorplans compared through Steps 1 to 5 of the method, each under its own tab, for any pair and any weights.