

Appendix

A IMPLEMENTATION SPECIFICATIONS

All models for testing the Poster101K dataset are implemented in PyTorch1.9. All the experiments are conducted on 4 NVIDIA GeForce RTX 3090 GPUs. The LACE model is trained with a 1e-6 learning rate, and the others are trained with 1e-4. The batch size is 256 for the LACE model and 64 for the others.

B R-GEN TASK RESULTS

Results of R-Gen task. This task is conditioned on the category of elements and some relationship constraints between the elements. CLG-LO is the only model suitable for the R-Gen task among the four models. Tab. 1 shows that the model generates better layouts with our dataset Poster101K*. Meanwhile, the generated layouts using our dataset have an overlap score of 22.01, lower than that of using the other tested datasets. However, compared to our dataset, considering the data in PubLayNet and Rico are relatively more structured, it is easier to reach a low alignment score for the R-Gen task. This result indicates that it is challenging for the model to generate high-quality unstructured layouts.

Table 1: Quantitative comparison in the R-Gen task. Top results are highlighted in **bold**.

Models		CLG-LO		
Dataset	mIoU \uparrow	Overlap \downarrow	Align. \downarrow	FID \downarrow
PubLayNet	0.35	23.46	0.22	0.04
Rico	0.36	57.92	0.36	0.05
MagLayout	0.26	31.91	0.97	0.10
Poster101K*	0.31	22.01	1.00	0.02

C ABLATION RESULTS

We conducted an ablation study to check the influence of the underlay design element. We labelled all the underlay design elements in each poster image of our dataset, and duplicated our dataset but removed all the underlay design elements (Poster101K*) to figure out how the underlay affected the canvas overlay result. The experimental results are given in Tab. 2. The table shows lower (i.e., better) overlap results when all the underlay elements are ignored (the 2nd

metric of each task). Besides, the variation of the alignment score explains that the appearance of the underlay elements makes the canvas look neater (the 3rd metric of each task).

CLG-LO												
Dataset	Beau. Constrains Generation				Rela. Constraints Generation				U-Gen			
	mIOU	Overlap	Align.	FID	mIOU	Overlap	Align.	FID	mIOU	Overlap	Align.	FID
Poster101K*	0.29	1.85	0.24	0.06	0.31	22.01	1.00	0.02	0.31	22.92	0.88	0.02
Poster101K	0.21	0.80	0.18	0.28	0.26	40.80	0.40	0.07	0.25	43.76	0.29	0.15
DLT												
Dataset	C-Gen				CS-Gen				U-Gen			
	pIOU	Overlap	Align.	FID	pIOU	Overlap	Align.	FID	pIOU	Overlap	Align.	FID
Poster101K*	11.22	36.9	0.80	6.06	13.5	48.99	0.77	0.6	8.16	27.6	0.84	3.48
Poster101K	17.33	50.34	0.70	5.68	19.58	62.59	0.67	0.5	14.47	40.52	0.71	3.85
LayoutFormer++												
Dataset	C-Gen				CS-Gen				U-Gen			
	mIOU	Overlap	Align.	FID	mIOU	Overlap	Align.	FID	mIOU	Overlap	Align.	FID
Poster101K*	0.268	0.503	0.0014	0.374	0.363	0.345	0.012	0.027	0.527	0.345	0.056	4.959
Poster101K	0.260	0.668	0.0025	0.479	0.368	0.457	0.008	0.022	0.488	0.603	0.017	1.951
LACE												
Dataset	C-Gen				CS-Gen				U-Gen			
	mIOU	Overlap	Align.	FID	mIOU	Overlap	Align.	FID	mIOU	Overlap	Align.	FID
Poster101K*	0.131	8.026	1.025	1.641	0.170	11.434	1.402	1.628	-	37.895	1.404	1.676
Poster101K	0.109	22.819	0.899	1.327	0.155	31.068	1.051	1.296	-	38.036	0.665	1.455

Table 2: Ablation on Underlay labels (Poster101K* represents the filtered dataset without underlay labels)

D QUALITATIVE COMPARISON

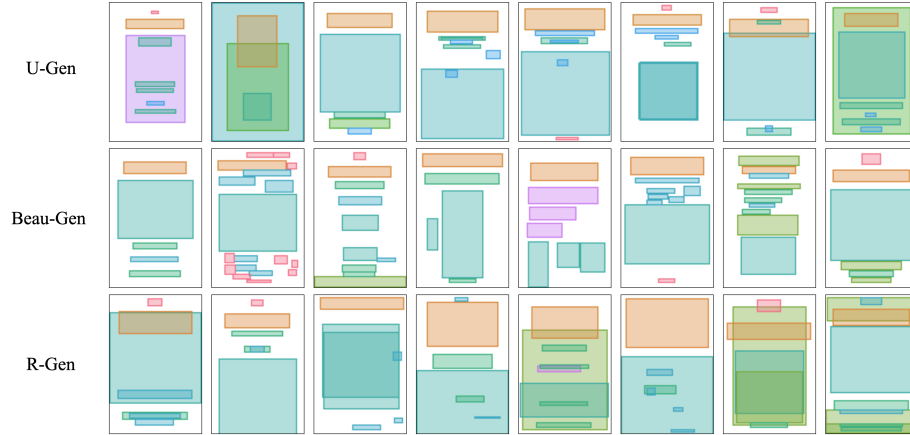


Figure 1: Qualitative results of CGL-LO on Poster101K

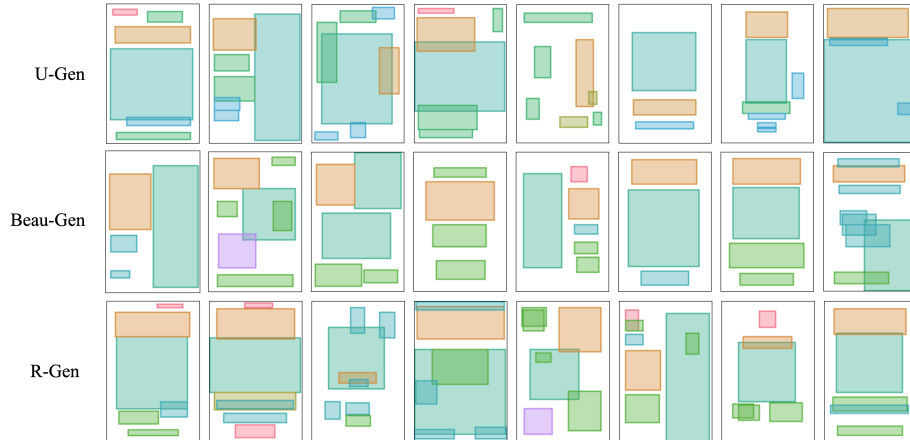


Figure 2: Qualitative results of CGL-LO on Poster101K*

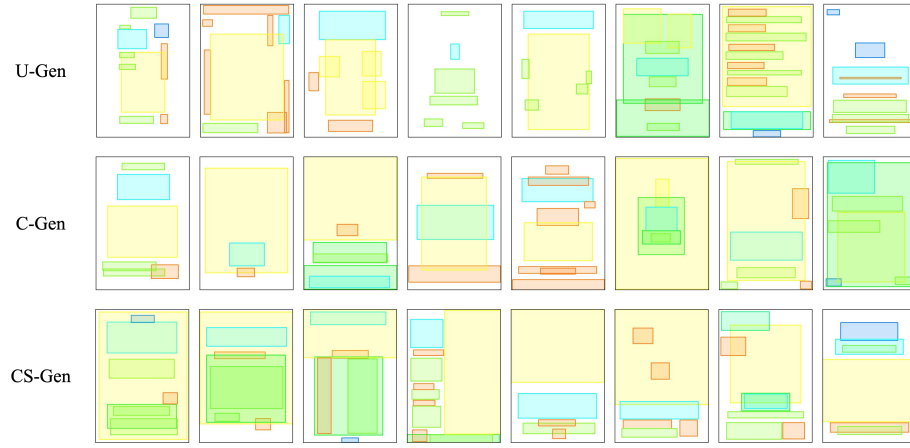


Figure 3: Qualitative results of DLT on Poster101K

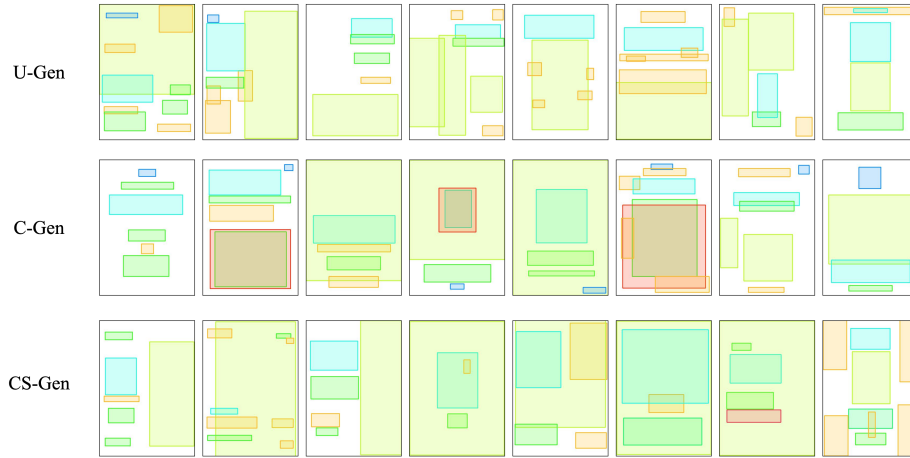


Figure 4: Qualitative results of DLT on Poster101K*



Figure 5: Qualitative results of LayoutFormer++ on Poster101K

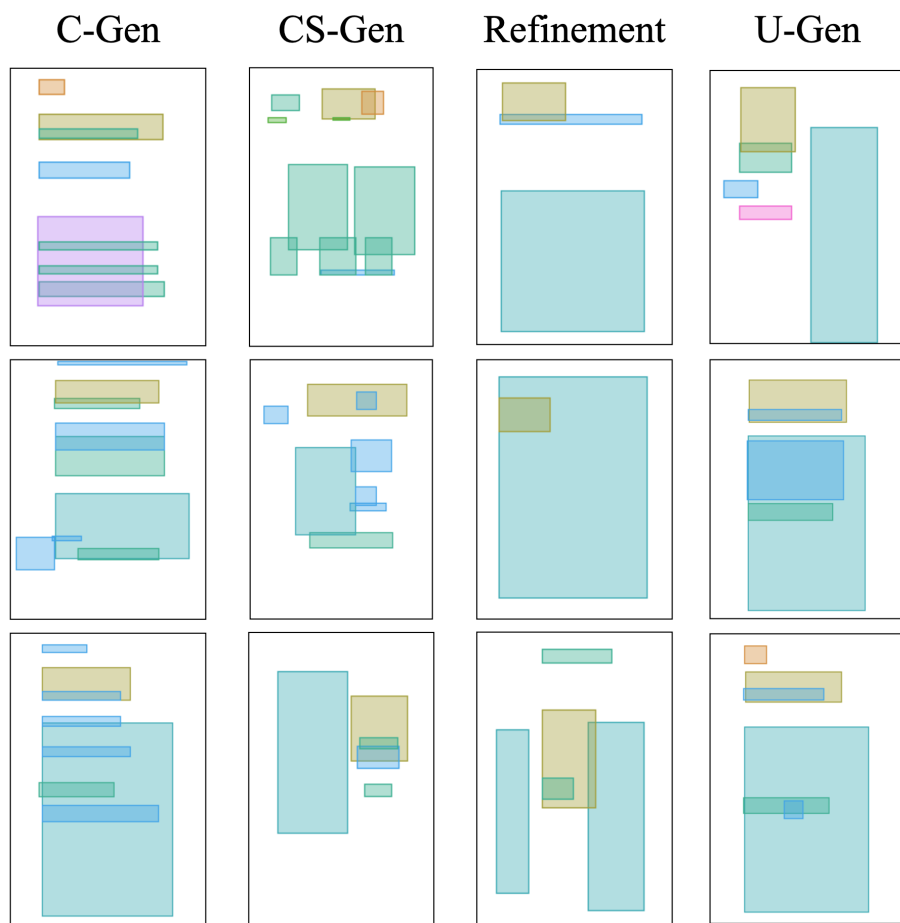


Figure 6: Qualitative results of LayoutFormer++ on Poster101K*

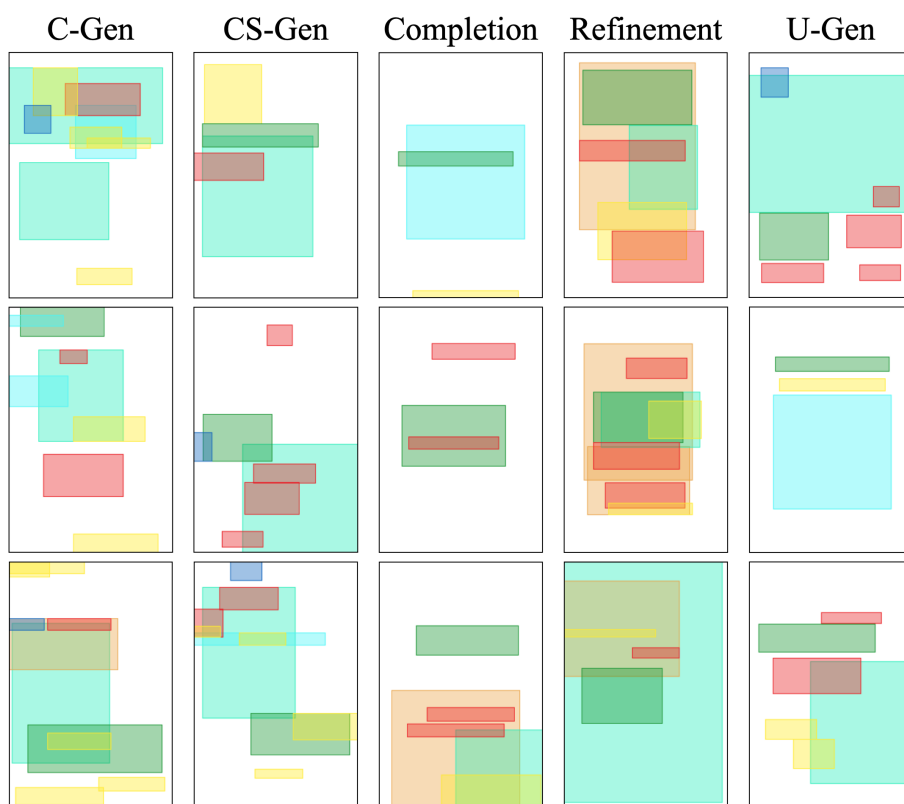


Figure 7: Qualitative results of LACE on Poster101K

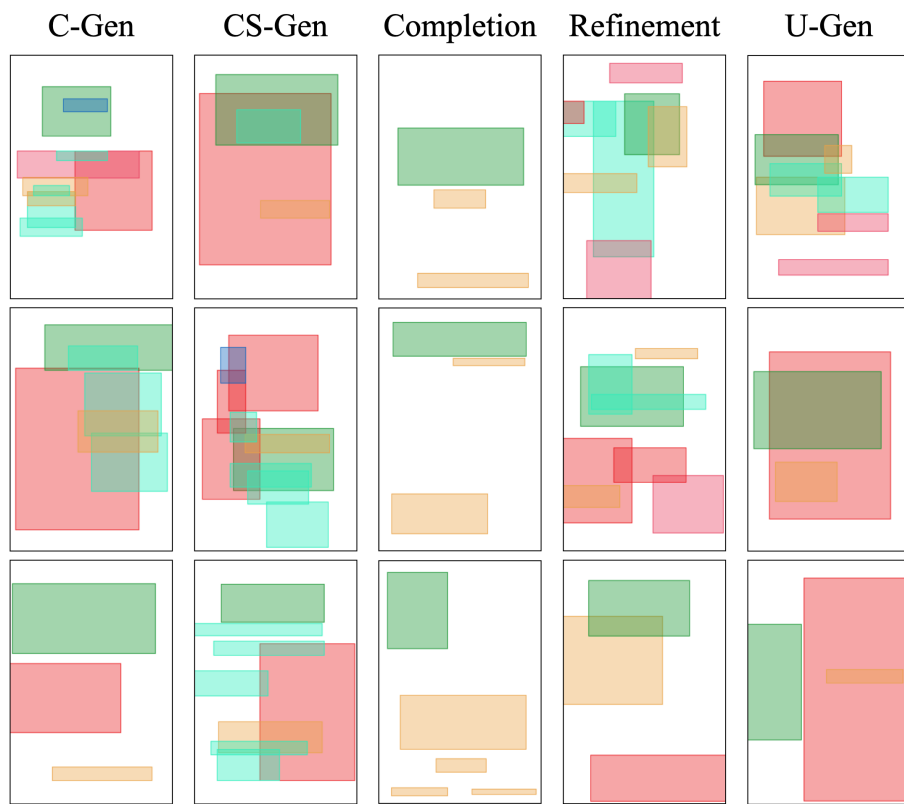


Figure 8: Qualitative results of LACE on Poster101K*