

1 A Additional Results of TokMan

2 To further demonstrate the robustness and generalizability of our TokMan framework, we provide
3 detailed comparisons across 20 benchmark layouts from the ICCAD2013-S/L datasets. As shown in
4 Table 1, our method consistently outperforms previous state-of-the-art OPC approaches—including
5 GAN-OPC[1], Neural-ILT[2], Devel-Set[3], Multi-ILT[4], and IL-ILT[5]—across all three key
6 evaluation metrics: Edge Placement Error (EPE), mask shot count, and Turn-Around Time (TAT).

7 Compared to the SOTA, IL-ILT, our method achieves an average of over 20% improvement in EPE,
8 and a 4-7 \times reduction in mask shots, underscoring its manufacturability advantage. Importantly, this
9 performance is achieved with minimal runtime overhead, and even with ILT refinement included, our
10 TAT remains competitive with the fastest baselines.

11 In addition to numerical metrics, Figure 2 and 3 presents qualitative comparisons on several repre-
12 sentative layouts, which is more critical than others. The masks generated by TokMan are not only
13 visually cleaner and Manhattan-aligned, but also produce resist patterns that closely match the desired
14 targets, validating the effectiveness of our discrete token correction process. Notably, TokMan avoids
15 the wavy, curvilinear artifacts observed in other methods, preserving edge integrity and topological
16 consistency, while effectively preventing feature bridging and line-end breakage, which helps ensure
17 the functional reliability of the underlying circuit.

18 These comprehensive results reinforce TokMan’s strength in balancing fidelity, manufacturability,
19 and efficiency, offering a production-ready solution for OPC under strict design rules.

Bench	GAN-OPC[1]			Neural-ILT[2]			DevelSet[3]			Multi-ILT[4]			IL-ILT[5]			Ours		
	EPE	#shots	TAT	EPE	#shots	TAT	EPE	#shots	TAT	EPE	#shots	TAT	EPE	#shots	TAT	EPE	#shots	TAT
S1	11.56	960	10.54	7.70	1561	10.41	6.09	1159	1.53	4.48	7505	0.84	3.88	5416	2.95	3.67	332	1.16
S2	10.30	754	10.46	5.30	1337	10.34	5.27	767	1.52	4.00	6772	0.84	3.92	5192	2.87	3.03	290	1.27
S3	32.92	1476	10.49	29.56	1964	10.34	15.07	1334	1.55	9.75	6906	1.30	7.97	5446	2.90	7.56	374	1.05
S4	8.22	498	11.08	4.22	904	10.35	5.88	303	1.54	2.55	7076	1.34	2.03	4220	2.83	0.33	132	0.69
S5	4.32	1190	20.22	4.64	1948	16.36	4.09	1187	1.51	2.16	6742	1.31	1.81	5710	2.87	1.40	312	0.75
S6	5.01	1134	15.30	3.24	1786	16.81	3.31	1313	1.52	2.43	7170	1.31	1.96	5687	2.87	1.60	392	0.71
S7	2.99	613	15.09	2.07	1555	14.96	2.75	713	1.54	1.22	5856	1.32	0.84	5145	2.85	0.67	278	0.82
S8	3.59	349	19.46	3.17	1009	14.96	3.41	635	1.55	1.97	6999	1.31	1.64	3970	2.86	1.30	169	0.69
S9	7.00	1229	22.24	3.90	1813	26.13	4.19	1565	1.52	2.54	6485	1.38	2.12	5618	2.87	1.53	454	0.97
S10	2.68	412	21.98	1.25	754	13.01	1.90	578	1.53	0.65	5837	1.38	0.81	3080	2.83	0.51	143	0.75
L1	5.03	1971	22.09	4.04	2755	10.35	3.88	2404	1.52	2.40	6999	1.35	2.21	8061	2.93	1.99	725	1.85
L2	5.31	1679	22.98	5.02	2498	10.35	3.54	2025	1.51	2.52	6774	1.30	2.02	8252	2.93	1.62	620	1.96
L3	10.59	2115	22.51	13.35	3342	10.36	7.59	2606	1.52	5.16	7394	1.33	3.86	8655	2.96	3.08	750	1.69
L4	4.17	1216	19.80	3.55	2245	10.36	3.46	1570	1.54	1.54	6851	1.32	1.40	7740	2.90	0.76	514	1.56
L5	4.05	2401	22.13	3.56	2752	10.36	3.45	2503	1.53	1.85	6503	1.30	1.63	7992	2.93	1.14	724	1.22
L6	3.58	2197	17.40	2.76	2690	10.38	3.27	2519	1.67	2.59	7047	1.41	1.86	8257	2.93	1.33	732	1.69
L7	3.27	1557	10.50	2.35	2319	10.37	2.68	1769	1.51	1.46	6387	1.35	1.00	7310	2.89	0.90	515	1.25
L8	3.20	1335	10.49	2.53	2575	10.40	2.76	1913	1.54	1.42	6536	1.32	1.22	7939	2.91	0.97	541	1.09
L9	5.30	2616	10.48	3.44	2845	10.42	3.45	2739	1.52	2.27	6636	1.33	1.87	7433	2.94	1.23	778	1.39
L10	2.77	1146	10.48	2.30	2143	18.61	2.32	1910	1.53	1.00	6742	1.28	0.98	7525	2.90	0.82	524	2.00

Table 1: Comparison of six OPC methods across 20 benchmark layouts with evaluation metrics: EPE, mask shots, and TAT.

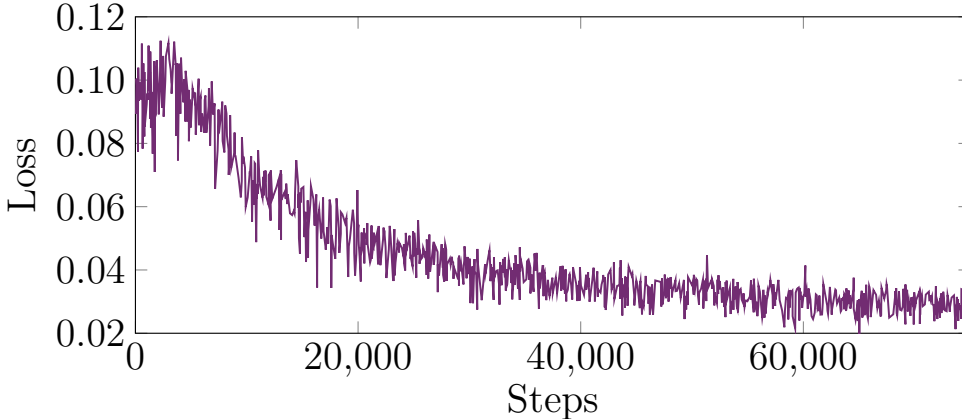


Figure 1: Training loss.

20 **B Results Visualization**

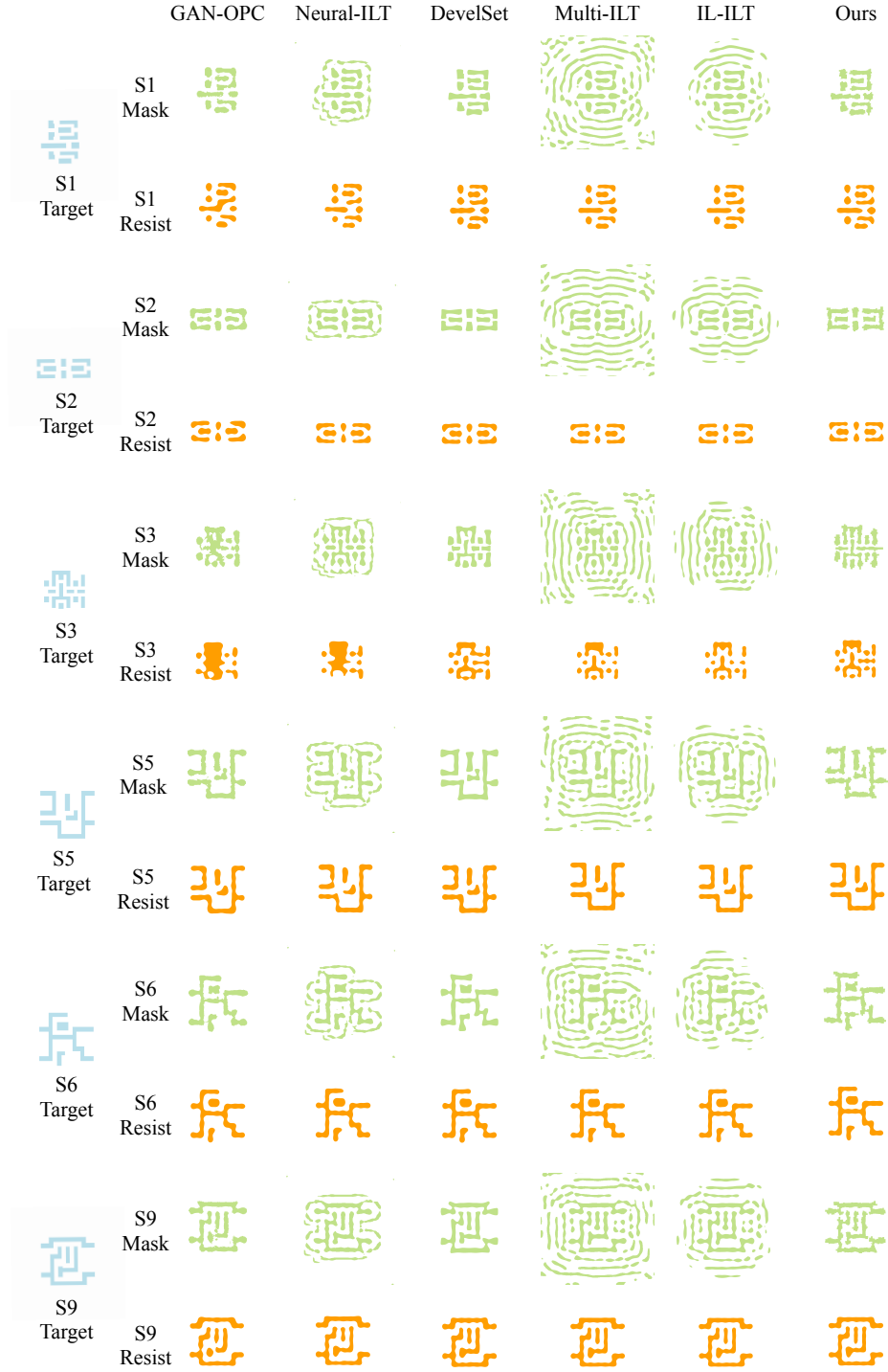


Figure 2: Visualization Comparison with SOTA on selected critical layouts of ICCAD13-S.

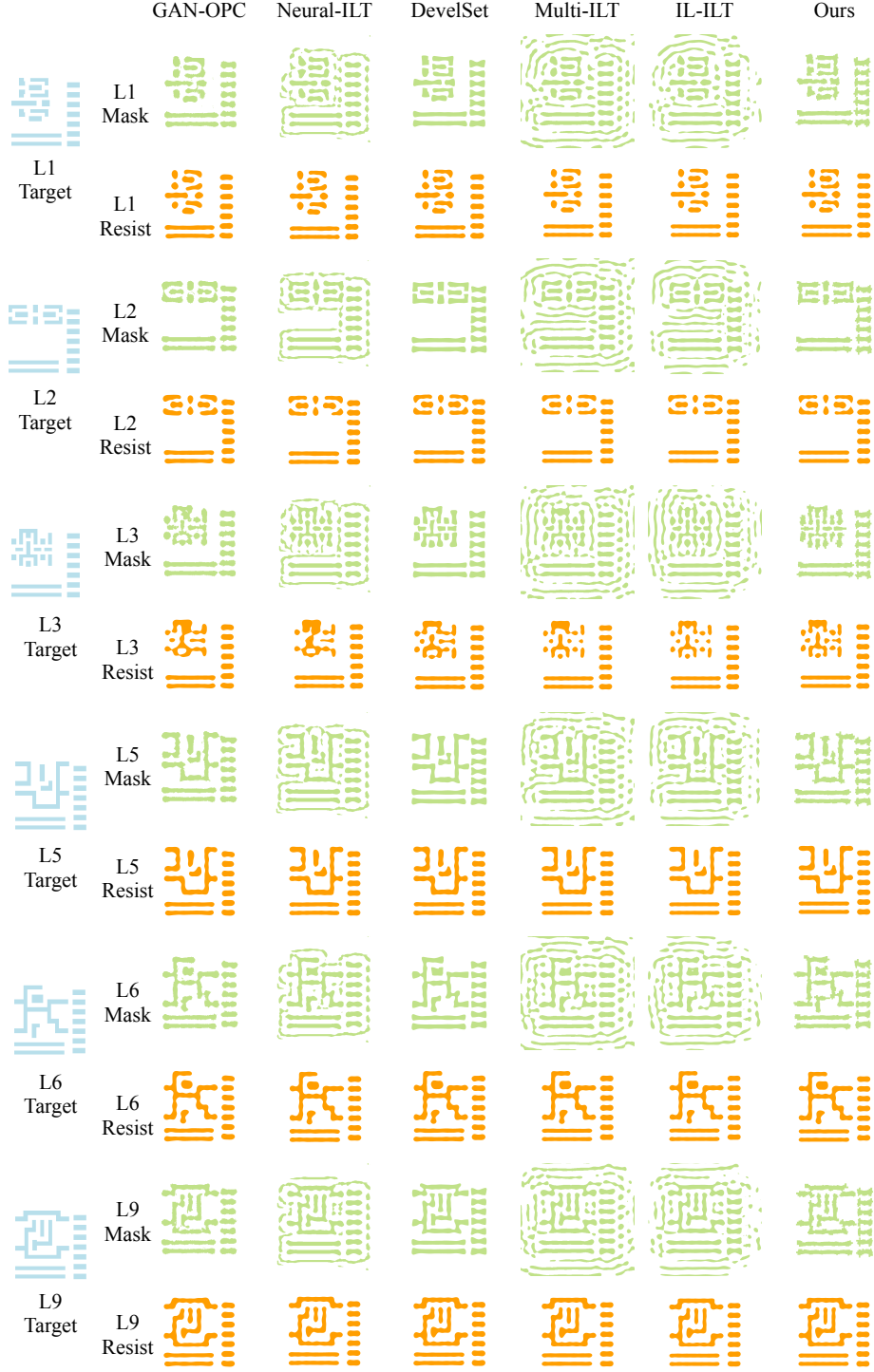


Figure 3: Visualization Comparison with SOTA on selected critical layouts of ICCAD13-L.

21 References

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