Table 1: Ablation on the choice of constructive model as the conquering policy in KP. ICAM and POMO are two available constructive solvers for KP. The datasets are the same as Table 11 in the original paper. The value shown in the table is the gap to optimal.

Method	KP500	KP1,000	KP2,000	KP5,000
UDC-$\boldsymbol{x}_{50}$(ICAM)	0.0247%	0.0260%	0.0237%	0.0249%
UDC-$\boldsymbol{x}_{250}$(ICAM)	0.0083%	0.0106%	0.0105%	0.0100%
UDC-$\boldsymbol{x}_{50}$(POMO)	0.0255%	0.0252%	0.0253%	0.0242%
UDC-$\boldsymbol{x}_{250}$(POMO)	0.0098%	0.0107%	0.0119%	0.0113%

Table 2: Ablation on whether to enable the DCR in training UDC for KP. The version with disabling DCR (i.e., Disable DCR) is the same as Table 11 in the original paper and the datasets are also the same. The value shown in the table is the gap to optimal.

Method	KP500	KP1,000	KP2,000	KP5,000
UDC-$\boldsymbol{x}_{50}$(Disable DCR)	0.0247%	0.0260%	0.0237%	0.0249%
UDC-$\boldsymbol{x}_{250}$(Disable DCR)	0.0083%	0.0106%	0.0105%	0.0100%
UDC-$\boldsymbol{x}_{50}$(Enable DCR)	0.0105%	0.0258%	0.0254%	0.0273%
UDC-$\boldsymbol{x}_{250}$(Enable DCR)	0.0080%	0.0117%	0.0128%	0.0095%

Table 3: The revised version of Table 12 in the original paper. The time (i.e., Time in the table) of LKH3 on three datasets is now accurately listed.

	OVRP500			OVRP1,000			OVRP2,000		
Method	Obj.	Gap	Time	Obj.	Gap	Time	Obj.	Gap	Time
LKH3	23.51	-	16m	28.96	-	32m	39.88	-	27m
POMO	28.73	22.21%	1.5m	59.26	104.61%	16m	108.82	172.90%	16m
UDC-$\boldsymbol{x}_2$(α=50)	25.82	9.86%	1.4m	33.01	13.97%	3m	51.11	28.17%	42s
UDC-$\boldsymbol{x}_{50}$(α=50)	24.39	3.77%	7.9m	29.95	3.41%	15.5m	44.19	10.82%	4.5m
UDC-$\boldsymbol{x}_{250}$(α=50)	24.18	2.85%	34.5m	29.66	2.39%	1.1h	43.35	8.71%	20m

Table 4: Ablation on different algorithms as initial solutions $\boldsymbol{x}_0$. The conquering stages of all the variants are the constructive of UDC. Random-UDC represents directly a random solution as the initial solution. Nearest Greedy-UDC uses the nearest greedy algorithm (starting from the first node) and Random Insertion-UDC employs the random insertion heuristic as the initial solution. $\alpha = 1$ in all UDC variants. UDC-$\boldsymbol{x}_2$ and UDC-$\boldsymbol{x}_{50}$ is the original version. Obj. is the objective value and Gap represents the gap to the best method.

Method	TSP500		TSP1,000		TSP2,000	
Method	Obj.	Gap	Obj.	Gap	Obj.	Gap
Concorde	16.52	-	23.12	-	32.45	-
Random-UDC-$\boldsymbol{x}_2$	33.98	105.68%	67.82	193.34%	134.98	315.98%
Random-UDC-$\boldsymbol{x}_{50}$	26.11	58.01%	52.48	126.98%	104.48	221.96%
Nearest Greedy-UDC-$\boldsymbol{x}_2$	18.48	11.87%	26.42	14.27%	37.48	15.50%
Nearest Greedy-UDC-$\boldsymbol{x}_{50}$	17.88	8.23%	25.75	11.38%	36.80	13.40%
Random Insertion-UDC-$\boldsymbol{x}_2$	17.09	3.45%	24.08	4.17%	34.00	4.78%
Random Insertion-UDC-$\boldsymbol{x}_{50}$	16.84	1.93%	23.75	2.73%	33.55	3.38%
UDC-$\boldsymbol{x}_2$	17.12	3.62%	24.06	4.05%	34.44	6.13%
UDC-$\boldsymbol{x}_{50}$	16.92	2.41%	23.68	2.42%	33.60	3.54%