Experiment Results

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This document is dedicated to display the experimental results in detail, which the confusion matrix of each test case will be illustrated specifically. For more information, please contact xuluyang@cnic.cn.

Table 1: Confusion Matrix of Different Loss Functions of Subgraph (a)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	30914	7	159	36	31	1	30831	11	38	141	52	75	31025	6	79	13	9	16
VB	4	16514	77	11	1	0	10	16497	70	27	3	0	1	16549	44	12	0	1
SA(V)	35	95	42203	37	10	65	150	175	41772	171	27	150	31	46	42305	21	8	34
HV	27	1	165	1720	38	0	0	0	2	1924	25	0	11	0	42	1882	15	1
HA	33	1	46	39	1502	1	9	0	9	8	1595	1	10	0	18	4	1587	3
FV	205	2	48	10	6	14529	181	2	11	27	21	14558	75	2	27	4	8	14684

Table 2: Confusion Matrix of Different Loss Functions of Subgraph (b)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	6	0	781	5	4	795	1528	1	4	33	19	6	1488	0	13	5	14	71
VB	0	19	16381	15	0	0	3	16293	65	54	0	0	0	16334	47	34	0	0
SA(V)	0	0	42680	50	2	59	1424	535	40307	194	20	311	3	32	42686	46	9	15
HV	0	0	1675	37307	0	309	16	3	20	39159	93	0	0	2	16	39270	1	2
HA	1	0	1271	191	49	45	11	2	16	69	1458	1	1	1	31	60	1462	2
FV	0	0	320	9	10	14435	189	1	17	49	28	14490	26	0	296	13	28	14411

Table 3: Confusion Matrix of Different Loss Functions of Subgraph (c)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	31209	31	56	2	112	25	31193	19	24	93	94	2	31262	5	40	31	96	1
VB	9	13636	14	0	53	0	1	16340	23	22	26	0	3	16357	21	18	13	0
SA(V)	19	157	1922	0	7	21	11	38	2058	4	2	13	8	49	2054	3	3	9
HV	48	80	38	38479	867	10	39	0	4	28808	671	0	1	0	4	39168	348	1
HA	108	36	36	43	30306	8	71	12	47	198	30204	4	49	5	37	465	29979	2
FV	203	11	9	0	26	14479	194	1	11	17	27	14478	61	1	11	11	25	14619

Table 4: Confusion Matrix of Different Loss Functions of Subgraph (d)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	30605	0	144	171	54	2	30380	11	218	188	113	66	30853	0	82	34	7	
VB	1	723	78	0	0	0	3	796	3	0	0	0	0	797	5	0	0	0
SA(V)	37	53	42647	89	14	10	161	241	40642	233	333	950	7	4	42459	43	10	27
HV	18	0	128	39679	2	0	98	4	110	39391	212	12	3	0	11	39811	2	0
HA	17	0	61	177	1308	0	27	1	48	47	1436	4	14	0	29	57	1463	0
FV	69	0	310	25	18	284	21	0	17	25	11	632	60	0	22	6	9	609

Table 5: Confusion Matrix of Different Loss Functions of Subgraph (e)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	30938	11	106	58	15	20	30487	7	226	106	43	279	30891	4	138	51	32	32
VB	3	16534	53	13	2	2	2	16493	85	22	3	2	7	16520	67	10	0	3
SA(V)	133	101	41665	150	16	380	200	381	40795	240	44	785	74	105	41842	117	27	280
HV	45	9	114	1752	22	9	7	1	74	1838	22	9	43	4	143	1715	40	6
HA	37	3	34	54	1490	4	14	4	36	51	1516	1	29	1	43	38	1502	9
FV	184	0	395	23	8	14190	81	0	280	29	14	14396	186	0	669	19	9	13917

Table 6: Confusion Matrix of Different Loss Functions of Subgraph (f)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	1508	0	42	10	5	25	1521	2	33	11	13	11						
VB	3	16331	55	22	2	2	8	16304	61	27	12	3						
SA(V)	71	100	41947	115	37	521	94	518	40804	242	119	1014						
HV	13	18	203	38943	76	38	51	2	189	38654	276	19						
HA	5	7	47	107	1390	1	9	1	35	53	1456	3						
FV	150	2	167	18	8	14429	187	0	124	24	16	14423						

Table 7: Confusion Matrix of Different Loss Functions of Subgraph (g)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	31139	13	38	90	124	31	31150	5	51	79	113	37	31148	3	55	100	97	32
VB	9	16340	28	13	21	1	5	16317	43	21	23	3	5	16325	46	16	19	1
SA(V)	47	83	1767	43	54	132	41	58	1855	26	12	134	30	56	1924	15	24	77
HV	42	4	4	38762	698	12	48	10	28	38755	674	7	30	2	7	39001	472	10
HA	99	7	8	366	30048	9	109	9	36	321	30050	12	106	9	23	580	29802	17
FV	193	0	36	22	33	14444	181	1	36	44	24	14442	178	0	56	42	20	14432

Table 8: Confusion Matrix of Different Loss Functions of Subgraph (h)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	31240	3	125	8	32	22	29974	44	907	149	62	371	31283	4	123	63	10	24
VB	4	16303	73	27	3	1	1	16361	27	10	3	9	14	16292	85	20	0	0
SA(V)	93	112	41961	187	39	126	145	665	40047	875	115	671	148	94	42027	127	16	106
HV	61	8	78	39256	15	2	110	194	1279	37090	372	375	73	6	217	39106	15	3
HA	39	2	27	112	1300	2	15	7	58	62	1326	14	41	6	54	92	1288	1
FV	68	1	271	19	5	370	12	10	184	36	9	483	70	0	266	14	2	382

Table 9: Confusion Matrix of Different Loss Functions of Subgraph (i)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	30976	10	80	53	27	2	30917	5	47	71	88	20	31022	6	54	31	16	19
VB	3	16553	38	12	1	0	9	16520	39	33	3	4	4	16548	39	15	1	0
SA(V)	23	78	42220	84	20	20	109	108	41792	162	161	113	23	50	42270	68	8	26
HV	2	1	107	1821	20	0	0	0	3	1930	18	0	16	1	26	1885	17	6
HA	15	0	36	26	1543	2	15	0	7	13	1585	2	64	0	19	5	5	14707
FV	64	1	22	14	9	14670	179	0	10	16	33	14562	64	0	19	5	5	14707

Table 10: Confusion Matrix of Different Loss Functions of Subgraph (j)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	1494	0	11	11	6	69	1555	0	13	4	15	4	1540	0	13	9	2	27
VB	1	16364	31	19	0	0	11	16323	54	19	7	1	0	16346	39	30	0	0
SA(V)	10	132	42489	118	13	29	159	289	41984	54	160	145	2	51	42651	62	8	17
HV	4	2	173	39107	5	0	88	22	300	38622	258	1	0	3	33	39250	4	1
HA	4	3	40	68	1434	8	0	1	32	4	1518	2	1	1	25	68	1459	3
FV	52	0	27	21	6	14668	95	1	20	14	31	14613	35	0	34	8	9	14688

Table 11: Confusion Matrix of Different Loss Functions of Subgraph (l)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	31262	10	234	24	111	4	31133	5	48	163	81	5	31282	3	29	33	78	10
VB	3	16359	16	12	20	2	9	16344	20	32	6	1	6	16357	20	17	12	0
SA(V)	9	30	2064	3	7	13	218	31	1744	110	1	22	6	14	2086	3	7	10
HV	10	2	7	38877	623	3	14	0	13	39165	297	33	42	0	3	39118	356	3
HA	59	8	24	132	30302	12	51	4	28	788	29657	9	80	2	23	550	29877	5
FV	74	2	10	6	32	14604	198	0	8	27	24	14471	69	0	8	11	19	14621

Table 12: Confusion Matrix of Different Loss Functions of Subgraph (m)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	30794	0	50	70	52	10	29860	6	307	34	56	713	30666	1	116	37	151	5
VB	0	616	186	0	0	0	0	798	1	0	0	3	2	795	5	0	0	0
SA(V)	67	3	42115	272	37	56	65	439	40454	32	69	1491	43	18	42401	47	32	9
HV	25	0	22	39759	20	1	46	3	49	38489	580	660	19	1	80	39428	299	0
HA	31	0	25	114	1392	1	1	0	14	2	1531	15	12	1	32	73	1441	4
FV	70	0	11	15	3	607	3	1	7	2	7	686	66	0	25	7	10	598

Table 13: Confusion Matrix of Different Loss Functions of Subgraph (o)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	31032	0	66	15	7	28	30360	67	413	12	40	256	31031	8	52	21	16	20
VB	5	16524	68	7	1	2	0	16578	10	3	1	15	3	16564	28	10	1	1
SA(V)	77	51	42234	48	7	28	221	495	40589	13	50	1077	33	68	42237	71	15	21
HV	21	7	64	1844	13	2	60	95	70	1460	33	233	11	8	53	1869	7	3
HA	41	0	20	12	1537	12	4	5	2	2	1599	10	9	0	10	7	1594	2
FV	80	2	20	1	4	14693	5	12	9	0	14	14760	66	0	24	4	8	14698

Table 14: Confusion Matrix of Different Loss Functions of Subgraph (p)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	1429	1	15	7	51	88	1557	0	14	5	11	4	1531	0	16	6	2	36
VB	0	16712	206	29	3	5	3	16314	74	17	7	0	0	16342	46	25	1	1
SA(V)	11	53	42534	116	18	59	63	110	42496	39	32	51	2	61	42674	40	6	8
HV	2	4	93	39179	6	7	25	5	350	38662	247	2	0	5	48	39211	25	2
HA	1	0	43	81	1430	2	3	0	18	3	1533	0	5	0	20	32	1498	2
FV	12	0	39	13	20	14690	51	0	39	6	18	14660	25	1	30	6	7	14705

Table 15: Confusion Matrix of Different Loss Functions of Subgraph (q)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	3209	8	19	55	115	29	31259	1	35	23	81	36	31296	4	22	27	71	15
VB	8	14346	22	32	12	1	3	14346	34	11	16	2	10	16357	10	16	16	3
SA(V)	13	41	1891	8	33	140	3	21	2089	2	1	10	17	40	1985	4	13	67
HV	5	2	4	39019	398	4	17	2	20	388884	591	6	6	1	2	38947	563	3
HA	50	8	16	201	29957	5	66	2	49	210	30192	18	88	7	11	267	30156	8
FV	71	1	22	7	36	1459	53	0	14	5	17	14639	74	1	9	3	16	14625

Table 16: Confusion Matrix of Different Loss Functions of Subgraph (r)

Category	Categorical Cross Entropy						Focal Loss						UniLoss					
	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV	FA	VB	SA(V)	HV	HA	FV
FA	30794	2	97	43	8	32	29742	17	263	27	77	850	30867	0	64	37	8	0
VB	2	787	13	0	0	0	3	785	10	0	1	3	1	784	16	0	1	0
SA(V)	27	72	42195	129	11	116	129	92	36550	39	28	5712	29	18	42367	113	11	12
HV	4	0	41	39771	8	3	74	22	454	38952	116	209	3	0	48	39769	7	0
HA	27	0	30	114	1381	11	5	0	14	21	1507	16	12	0	17	59	1474	1
FV	54	0	170	5	3	474	6	1	76	1	4	618	53	0	15	9	6	623