TABLE I
PERFORMANCE COMPARISON: HOMOGENEOUS KG VERSUS HETEROGENEOUS KG.

Comparison Configuration	Top-5 Acc (Raw)	Top-5 Acc (Filtered)	Top-10 Acc (Raw)	Top-10 Acc (Filtered)	MRR (Raw)	MRR (Filtered)	MAP	TC-Acc
CWE-only KG	0.456	0.592	0.574	0.681	0.308	0.449	0.564	0.778
Full KG	**0.473**	**0.628**	**0.596**	**0.713**	**0.316**	**0.459**	**0.576**	**0.792**
CAPEC-only KG	0.753	0.853	0.857	0.881	0.572	0.782	0.773	0.637
Full KG	**0.777**	**0.882**	**0.893**	**0.914**	**0.589**	**0.793**	**0.787**	**0.662**
CWE&CAPEC KG	0.471	0.614	0.599	0.701	0.327	0.471	0.606	0.746
Full KG	**0.487**	**0.638**	**0.612**	**0.717**	**0.337**	**0.494**	**0.625**	**0.770**

TABLE II
P-VALUE OF STATISTICAL TEST: HOMOGENEOUS KG VERSUS HETEROGENEOUS KG

	Top-5 Acc (Raw)	Top-5 Acc (Filtered)	Top-10 Acc (Raw)	Top-10 Acc (Filtered)	MRR (Raw)	MRR (Filtered)	MAP	TC-Acc
CWE-only KG	0.005859	0.003906	0.008004	0.001953	0.064453	0.011407	0.021303	0.001953
CAPEC-only KG	0.009091	0.005889	0.005889	0.005761	0.052773	0.040555	0.028954	0.005510
CWE&CAPEC KG	0.009766	0.013672	0.013672	0.003906	0.003906	0.001953	0.003906	0.001953

TABLE III
LINK PREDICTION - OVERALL PERFORMANCE.

Model	Top-5 Acc (Raw)	Top-5 Acc (Filtered)	Top-10 Acc (Raw)	Top-10 Acc (Filtered)	MRR (Raw)	MRR (Filtered)	MAP
M-1	0.412	0.503	0.507	0.583	0.292	0.402	0.591
M-2	0.392	0.474	0.496	0.558	0.282	0.391	0.573
M-3	0.418	0.528	0.519	0.596	0.311	0.405	0.606
M-4	0.420	0.542	0.533	0.612	0.314	0.420	0.604
M-5	0.433	0.529	0.533	0.612	0.317	0.419	0.624
M-6	0.447	0.573	0.542	0.640	0.325	0.448	0.647
M-7	**0.465**	**0.596**	**0.560**	**0.661**	**0.340**	**0.464**	**0.688**

TABLE IV
P-VALUE OF STATISTICAL TEST: M-7 VERSUS M-1 ON OVERALL PERFORMANCE OF LINK PREDICTION

Top-5 Acc (Raw)	Top-5 Acc (Filtered)	Top-10 Acc (Raw)	Top-10 Acc (Filtered)	MRR (Raw)	MRR (Filtered)	MAP
0.013794	0.001953	0.003906	0.001953	0.005761	0.005510	0.005761

TABLE V
LINK PREDICTION - TOP-5 ACCURACY (FILTERED) BY RELATIONSHIP TYPE AND PREDICT-HEAD/TAIL.

	Model	instanceof	targetof	childof	parentof	peerof	canfollow	canprecede	semantic	overall
Predict Head $<?h, r, t>$	M-1	0.024	0.396	0.572	0.792	0.111	0.286	0.571	0.193	0.378
	M-2	0.017	0.386	0.555	0.758	0.056	0.286	0.571	0.189	0.359
	M-3	0.047	0.409	0.578	0.811	0.111	0.307	0.653	0.204	0.383
	M-4	0.093	0.420	0.618	0.845	0.167	0.357	0.653	0.234	0.399
	M-5	0.065	0.420	0.630	0.831	0.167	0.429	0.643	0.259	0.396
	M-6	0.141	0.443	0.684	0.858	0.278	0.457	0.669	0.294	0.441
	M-7	**0.193**	**0.466**	**0.703**	**0.865**	**0.278**	**0.500**	**0.714**	**0.314**	**0.469**
Predict Tail $<h, r, ?t>$	M-1	0.650	0.342	0.789	0.568	0.222	0.357	0.591	0.437	0.625
	M-2	0.595	0.330	0.760	0.557	0.167	0.357	0.571	0.429	0.588
	M-3	0.822	0.342	0.808	0.575	0.222	0.371	0.623	0.442	0.671
	M-4	0.831	0.352	0.851	0.604	0.222	0.428	0.714	0.465	0.684
	M-5	0.729	0.355	0.845	0.656	0.278	0.428	0.714	0.477	0.662
	M-6	0.838	0.386	0.862	0.656	0.278	0.457	0.757	0.500	0.704
	M-7	**0.848**	**0.398**	**0.878**	**0.689**	**0.278**	**0.500**	**0.766**	**0.523**	**0.720**

TABLE VI
p-VALUE OF STATISTICAL TEST: M-7 VERSUS M-1 ON OVERALL PERFORMANCE TOP-5 ACCURACY (FILTERED) BY RELATIONSHIP TYPE AND PREDICT-HEAD/TAIL OF LINK PREDICTION

	instanceof	targetof	childof	parentof	peerof	canfollow	canprecede	semantic	overall
Head	0.001953	0.014369	0.009091	0.009030	0.034611	0.014147	0.034097	0.009091	0.005761
Tail	0.001953	0.009091	0.005666	0.001953	0.009091	0.014029	0.005857	0.005761	0.013672

TABLE VII
TRIPLET CLASSIFICATION - DETAILED AND OVERALL PERFORMANCE.

Model	instanceof	targetof	childof	parentof	peerof	canfollow	canprecede	semantic	**overall**
M-1	0.837	0.795	0.682	0.740	0.694	0.714	0.679	0.866	0.781
M-2	0.834	0.756	0.676	0.736	0.639	0.652	0.607	0.866	0.770
M-3	0.842	0.812	0.703	0.747	0.722	0.750	0.714	0.877	0.792
M-4	0.873	0.813	0.713	0.760	0.722	0.750	0.714	0.877	0.809
M-5	0.857	0.818	0.727	0.764	0.694	0.750	0.714	0.889	0.807
M-6	0.884	0.831	0.730	0.777	0.722	0.786	0.714	0.889	0.818
M-7	**0.911**	**0.834**	**0.747**	**0.797**	**0.756**	**0.791**	**0.730**	**0.889**	**0.829**

TABLE VIII
p-VALUE OF STATISTICAL TEST: M-7 VERSUS M-1 ON DETAILED AND OVERALL PERFORMANCE OF TRIPLET CLASSIFICATION

instanceof	targetof	childof	parentof	peerof	canfollow	canprecede	semantic	overall
0.005793	0.013911	0.009091	0.005541	0.009091	0.005793	0.005761	0.007882	0.005793

TABLE IX
p-VALUE OF STATISTICAL TEST: M-7 VERSUS M-1 ON PREDICTION PERFORMANCE OF $<CVE, instanceof, CWE>$ FOR NEWLY PUBLISHED CVEs

Top-5 Acc	Top-10 Acc	MRR	MAP	TC-Acc
0.001953	0.003906	0.003906	0.001953	0.005761