

MRP 2019: Cross-Framework Meaning Representation Parsing

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Abstract

The 2019 Shared Task at the Conference for Computational Language Learning (CoNLL) was devoted to Meaning Representation Parsing (MRP) across frameworks. Five distinct approaches to the representation of sentence meaning in the form of directed graph were represented in the training and evaluation data for the task, packaged in a uniform abstract graph representation and serialization. The task received submissions from eighteen teams, of which five do not participate in the official ranking because they arrived after the closing deadline, made use of additional training data, or involved one of the task co-organizers. All technical information regarding the task, including system submissions, official results, and links to supporting resources and software are available from the task web site at:

<http://mrp.nlppl.eu>

A Background

This file provides a ‘virtual appendix’ to the task overview paper (Oepen et al., 2019) for the shared task on Cross-Framework Meaning Representation Parsing (MRP) at the 2019 Conference for Computational Language Learning (CoNLL). The appendix provides more detailed evaluation results, broken down by both individual frameworks and different component types in the semantic graphs.

B Cross-Framework Metric

Tables 1 through 5 provided per-framework results using the official MRP metric, reporting precision (P), recall (R), and F_1 score (F).

C Framework-Specific Metrics

This section provides per-framework results using the pre-existing framework-specific metrics: SDP (Oepen et al., 2014) for the bi-lexical DM and PSD graphs in Tables 6 and 7; EDM (Dridan and Oepen, 2011) for the EDS frameworks in Table 8; the SemEval 2019 UCCA metric (Hershcovich et al., 2019) in Table 9; and, finally, SMATCH scores (Cai and Knight, 2013) for AMR in Table 10.

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	Tops			Labels			Properties			Anchors			Edges			Attributes			All		
	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F
ERG	.92	.92	.918	.99	.99	.987	.96	.96	.956	.99	.99	.994	.91	.91	.912	-	-	-	.96	.96	.961
	.95	.95	.950	.99	.99	.987	.98	.98	.978	.99	.00	.995	.93	.93	.927	-	-	-	.97	.97	.973
TUPA single	.61	.56	.585	.48	.78	.592	.42	.59	.492	.85	.82	.834	.34	.57	.423	-	-	-	.47	.67	.555
	.73	.67	.698	.52	.81	.632	.43	.60	.502	.88	.86	.867	.37	.61	.462	-	-	-	.50	.70	.586
TUPA multi	.53	.51	.520	.40	.75	.520	.22	.66	.329	.85	.83	.840	.24	.54	.329	-	-	-	.31	.69	.427
	.74	.67	.705	.35	.73	.478	.19	.64	.290	.85	.84	.845	.21	.56	.307	-	-	-	.28	.68	.395
SJTU-NICT	.93	.93	.933	.95	.95	.949	.96	.95	.955	.99	.99	.993	.93	.92	.924	-	-	-	.96	.95	.955
	.97	.96	.965	.93	.93	.933	.94	.94	.944	.99	.99	.990	.93	.93	.933	-	-	-	.95	.95	.949
HIT-SCIR	.93	.93	.926	.93	.93	.930	.95	.95	.953	.99	.99	.993	.93	.92	.925	-	-	-	.95	.95	.951
	.95	.95	.950	.93	.93	.928	.95	.95	.947	.99	.99	.990	.94	.94	.935	-	-	-	.95	.95	.950
ShanghaiTech	.94	.93	.937	.91	.91	.910	.96	.95	.957	.99	.99	.991	.94	.92	.930	-	-	-	.95	.95	.949
	.99	.99	.990	.88	.89	.885	.94	.95	.945	.99	.00	.994	.94	.94	.939	-	-	-	.94	.94	.943
Saarland	.81	.92	.859	.97	.97	.968	.94	.94	.935	.99	.99	.991	.91	.91	.909	-	-	-	.95	.95	.947
	.83	.93	.877	.96	.97	.962	.93	.94	.934	.98	.99	.988	.92	.93	.925	-	-	-	.94	.95	.948
JBNU	.92	.92	.923	.91	.90	.908	.95	.94	.947	.99	.98	.987	.92	.90	.911	-	-	-	.94	.94	.940
	.96	.96	.960	.88	.88	.883	.91	.92	.915	.98	.98	.981	.93	.92	.922	-	-	-	.92	.92	.924
Amazon	.71	.71	.709	.96	.95	.951	.93	.93	.931	.99	.98	.986	.88	.87	.877	-	-	-	.94	.93	.933
	.84	.84	.840	.92	.92	.917	.92	.92	.919	.98	.98	.980	.87	.88	.872	-	-	-	.92	.92	.921
SUDA-Alibaba	.91	.91	.911	.90	.91	.903	.91	.92	.915	.97	.99	.982	.89	.91	.898	-	-	-	.91	.93	.923
	.91	.88	.893	.86	.89	.872	.88	.91	.895	.96	.99	.979	.88	.92	.896	-	-	-	.89	.92	.907
Hitachi	.91	.93	.922	.91	.91	.911	.86	.87	.865	.99	.99	.991	.91	.93	.919	-	-	-	.91	.91	.910
	.94	.96	.951	.88	.89	.882	.83	.84	.837	.98	.99	.986	.91	.94	.924	-	-	-	.89	.90	.894
ÚFAL MRPipe	.80	.77	.784	.94	.81	.871	.92	.80	.856	.99	.86	.922	.80	.69	.743	-	-	-	.91	.79	.850
	.88	.89	.886	.93	.82	.870	.92	.80	.857	.99	.87	.929	.80	.70	.743	-	-	-	.91	.80	.854
ÚFAL-Oslo	.89	.89	.889	.60	.80	.687	.70	.94	.805	.75	.00	.858	.90	.86	.880	-	-	-	.72	.91	.805
	.90	.90	.900	.58	.83	.684	.64	.91	.755	.70	.00	.827	.90	.87	.886	-	-	-	.68	.91	.778
SJTU	.64	.38	.478	.52	.62	.565	.25	.55	.347	.84	.60	.702	.31	.32	.314	-	-	-	.36	.53	.431
	.74	.52	.612	.50	.64	.558	.24	.54	.331	.85	.60	.704	.27	.29	.279	-	-	-	.35	.53	.419
HKUST	.57	.58	.574	.60	.80	.687	-	-	-	.75	.99	.853	.30	.25	.273	-	-	-	.34	.41	.370
	.42	.42	.420	.58	.83	.684	-	-	-	.70	.99	.823	.31	.26	.282	-	-	-	.32	.42	.364
Bocharov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ÚFAL MRPipe	.85	.89	.874	.97	.97	.973	.95	.94	.945	.99	.99	.990	.87	.90	.883	-	-	-	.94	.95	.947
	.92	.94	.931	.96	.97	.965	.93	.94	.934	.98	.99	.987	.87	.91	.889	-	-	-	.93	.95	.943
Peking	.93	.93	.927	.92	.91	.915	.95	.94	.945	.99	.99	.991	.92	.92	.924	-	-	-	.94	.94	.944
	.96	.96	.960	.88	.88	.882	.91	.92	.914	.99	.99	.989	.92	.92	.921	-	-	-	.92	.93	.925
ÚFAL-Oslo	.89	.89	.889	.60	.80	.687	.70	.94	.805	.75	.00	.858	.90	.86	.880	-	-	-	.72	.91	.805
	.90	.90	.900	.58	.83	.684	.64	.91	.755	.70	.00	.827	.90	.87	.886	-	-	-	.68	.91	.778
CUHK	.01	.01	.006	.78	.93	.846	.73	.87	.795	.82	.98	.894	.11	.13	.116	-	-	-	.63	.75	.687
	.01	.01	.010	.72	.92	.807	.64	.83	.724	.76	.98	.857	.11	.14	.124	-	-	-	.57	.73	.644
Anonymous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 1: Detailed MRP scores for the DM graphs.

	Tops			Labels			Properties			Anchors			Edges			Attributes			All		
	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F
ERG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUPA single	.54	.52	.533	.50	.77	.610	.37	.56	.445	.82	.80	.814	.23	.42	.299	-	-	-	.44	.63	.518
TUPA multi	.60	.59	.595	.61	.79	.686	.42	.64	.508	.84	.83	.836	.30	.44	.357	-	-	-	.52	.68	.589
	.58	.46	.513	.56	.77	.646	.34	.57	.424	.82	.80	.807	.27	.39	.319	-	-	-	.45	.63	.526
	.62	.53	.570	.58	.77	.662	.31	.60	.413	.82	.80	.809	.30	.42	.354	-	-	-	.47	.65	.545
Saarland	.93	.95	.935	.95	.95	.952	.92	.92	.922	.99	.99	.990	.78	.78	.783	-	-	-	.91	.91	.913
	.93	.94	.933	.92	.92	.917	.76	.95	.844	.98	.98	.984	.77	.78	.776	-	-	-	.86	.91	.883
Hitachi	.95	.96	.954	.95	.95	.949	.91	.91	.912	.99	.99	.990	.79	.80	.795	-	-	-	.91	.92	.912
	.94	.96	.952	.92	.92	.920	.75	.94	.837	.98	.98	.982	.78	.79	.785	-	-	-	.86	.91	.884
SJTU-NICT	.97	.96	.963	.93	.93	.931	.92	.92	.916	.99	.99	.991	.81	.79	.803	-	-	-	.91	.91	.912
	.96	.96	.964	.90	.91	.905	.76	.95	.846	.98	.99	.985	.78	.79	.786	-	-	-	.86	.91	.885
HIT-SCIR	.96	.96	.960	.89	.89	.893	.93	.93	.931	.99	.99	.991	.80	.80	.796	-	-	-	.90	.91	.905
	.97	.96	.964	.88	.88	.879	.76	.95	.843	.98	.99	.985	.77	.78	.771	-	-	-	.85	.90	.874
Amazon	.91	.75	.820	.95	.96	.955	.92	.93	.923	.98	.99	.985	.75	.72	.735	-	-	-	.90	.90	.900
	.91	.81	.859	.92	.93	.926	.76	.96	.846	.98	.99	.983	.75	.77	.758	-	-	-	.85	.91	.879
ShanghaiTech	.96	.95	.958	.86	.85	.855	.93	.92	.924	.99	.98	.986	.81	.79	.802	-	-	-	.90	.89	.895
	.96	.96	.960	.77	.77	.768	.77	.95	.846	.98	.97	.977	.80	.80	.797	-	-	-	.83	.88	.852
JBNU	.96	.96	.961	.86	.85	.855	.88	.88	.880	.99	.98	.987	.79	.78	.785	-	-	-	.88	.88	.879
	.96	.96	.960	.77	.77	.772	.78	.95	.860	.98	.98	.982	.79	.79	.792	-	-	-	.84	.88	.857
SUDA-Alibaba	.96	.79	.866	.84	.85	.845	.84	.86	.850	.97	.99	.975	.74	.76	.752	-	-	-	.85	.86	.856
	.95	.85	.896	.75	.77	.760	.74	.95	.831	.95	.98	.966	.72	.76	.739	-	-	-	.79	.87	.828
ÚFAL MRPipe	.87	.75	.806	.92	.71	.803	.90	.71	.792	.99	.77	.870	.67	.50	.573	-	-	-	.87	.68	.763
	.87	.71	.784	.89	.63	.734	.72	.64	.678	.99	.70	.816	.65	.41	.498	-	-	-	.82	.60	.691
ÚFAL-Oslo	.93	.94	.935	.41	.66	.506	.34	.93	.501	.62	.00	.767	.80	.71	.751	-	-	-	.48	.83	.609
	.92	.96	.939	.34	.57	.424	.28	.97	.440	.59	.00	.742	.80	.74	.771	-	-	-	.43	.83	.566
SJTU	.66	.38	.484	.59	.63	.607	.34	.45	.390	.88	.62	.728	.25	.22	.234	-	-	-	.48	.48	.476
	.68	.44	.533	.58	.63	.606	.33	.54	.405	.90	.61	.727	.25	.25	.248	-	-	-	.47	.51	.488
HKUST	.83	.68	.749	.41	.66	.505	-	-	-	.62	.99	.763	.41	.32	.360	-	-	-	.28	.48	.353
	.75	.67	.708	.34	.57	.424	-	-	-	.59	.99	.738	.42	.31	.358	-	-	-	.26	.48	.334
Bocharov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ÚFAL MRPipe	.95	.94	.945	.96	.96	.959	.92	.93	.926	.99	.99	.990	.74	.78	.761	-	-	-	.90	.92	.910
	.96	.96	.955	.91	.92	.915	.76	.95	.844	.97	.98	.978	.74	.78	.761	-	-	-	.85	.91	.878
Peking	.97	.80	.874	.86	.86	.859	.92	.92	.920	.99	.99	.990	.80	.80	.803	-	-	-	.90	.89	.893
	.97	.86	.910	.78	.78	.777	.77	.96	.855	.98	.99	.986	.77	.79	.780	-	-	-	.83	.88	.853
CUHK	.01	.01	.008	.78	.93	.845	.70	.90	.790	.82	.98	.892	.06	.07	.062	-	-	-	.60	.71	.648
	.02	.02	.019	.68	.90	.777	.55	.92	.690	.75	.98	.848	.04	.05	.047	-	-	-	.51	.70	.590
ÚFAL-Oslo	.93	.94	.935	.41	.66	.506	.34	.93	.501	.62	.00	.767	.80	.71	.751	-	-	-	.48	.83	.609
	.92	.96	.939	.34	.57	.424	.28	.97	.440	.59	.00	.742	.80	.74	.771	-	-	-	.43	.83	.566
Anonymous	.19	.16	.173	.41	.66	.505	-	-	-	-	-	-	-	-	-	-	-	-	.08	.16	.109
	.20	.18	.189	.33	.57	.421	-	-	-	-	-	-	-	-	-	-	-	-	.07	.15	.095
Peking	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 2: Detailed MRP scores for the PSD graphs.

	Tops			Labels			Properties			Anchors			Edges			Attributes			All		
	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F
ERG	.90	.90	.902	.97	.96	.965	.96	.96	.960	.96	.96	.963	.93	.93	.929	–	–	–	.95	.95	.952
	.93	.93	.930	.96	.97	.964	.85	.88	.863	.98	.99	.983	.93	.94	.932	–	–	–	.96	.96	.959
TUPA single	.73	.56	.632	.81	.79	.796	.85	.86	.855	.90	.87	.883	.80	.71	.751	–	–	–	.83	.79	.810
	.83	.70	.761	.79	.78	.786	.65	.68	.667	.90	.89	.896	.81	.71	.760	–	–	–	.83	.79	.814
TUPA multi	.68	.51	.586	.71	.73	.720	.58	.63	.604	.82	.84	.827	.70	.66	.684	–	–	–	.74	.74	.740
	.74	.63	.681	.69	.73	.708	.20	.40	.263	.84	.88	.857	.71	.68	.693	–	–	–	.74	.76	.748
SUDA–Alibaba	.90	.90	.899	.91	.91	.912	.89	.91	.897	.95	.95	.949	.90	.90	.897	–	–	–	.92	.92	.918
	.94	.94	.940	.91	.92	.913	.72	.84	.778	.95	.96	.953	.91	.91	.911	–	–	–	.92	.93	.925
HIT-SCIR	.88	.82	.852	.90	.89	.894	.89	.91	.895	.95	.94	.943	.89	.88	.888	–	–	–	.91	.90	.907
	.92	.91	.915	.85	.86	.854	.76	.88	.815	.95	.96	.950	.89	.89	.890	–	–	–	.89	.90	.898
SJTU–NICT	.91	.85	.877	.93	.86	.894	.79	.76	.775	.97	.90	.934	.95	.82	.878	–	–	–	.95	.86	.899
	.97	.89	.927	.93	.88	.904	.27	.24	.255	.97	.93	.949	.94	.86	.894	–	–	–	.94	.88	.912
Saarland	.86	.86	.863	.91	.90	.906	.95	.67	.790	.87	.86	.866	.92	.90	.910	–	–	–	.90	.88	.891
	.94	.93	.935	.94	.93	.932	.65	.60	.625	.92	.91	.914	.93	.91	.918	–	–	–	.93	.91	.920
ShanghaiTech	.90	.90	.900	.85	.84	.844	.57	.91	.700	.91	.90	.907	.86	.88	.871	–	–	–	.86	.88	.869
	.95	.95	.950	.83	.85	.839	.20	.76	.314	.91	.93	.918	.88	.90	.889	–	–	–	.86	.89	.875
Hitachi	.73	.74	.732	.82	.83	.823	.47	.77	.585	.86	.87	.869	.88	.82	.850	–	–	–	.84	.84	.837
	.84	.86	.852	.75	.80	.776	.04	.28	.067	.85	.90	.874	.86	.83	.843	–	–	–	.78	.84	.811
ÚFAL MRPipe	.68	.81	.740	.83	.61	.704	.94	.31	.465	.86	.64	.731	.76	.48	.590	–	–	–	.82	.57	.674
	.69	.88	.775	.75	.55	.636	.00	.32	.485	.85	.63	.723	.70	.49	.579	–	–	–	.77	.57	.651
SJTU	.61	.22	.326	.69	.43	.530	.54	.52	.528	.85	.52	.647	.73	.28	.405	–	–	–	.75	.41	.532
	.67	.32	.432	.66	.45	.536	.45	.36	.400	.83	.57	.678	.73	.31	.432	–	–	–	.74	.44	.553
ÚFAL–Oslo	.75	.74	.746	–	–	–	–	–	–	.76	.64	.695	.71	.42	.530	–	–	–	.27	.35	.306
	.83	.83	.830	–	–	–	–	–	–	.69	.72	.708	.78	.54	.635	–	–	–	.26	.43	.326
Amazon	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bocharov	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
JBNU	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
HKUST	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peking	.83	.83	.829	.95	.94	.946	.91	.96	.936	.96	.96	.961	.94	.93	.933	–	–	–	.95	.94	.945
	.89	.89	.890	.91	.92	.918	.49	.88	.629	.95	.96	.959	.92	.92	.918	–	–	–	.92	.93	.928
ÚFAL MRPipe	.83	.83	.828	.91	.89	.900	.91	.91	.912	.94	.92	.927	.85	.85	.848	–	–	–	.90	.89	.891
	.88	.86	.869	.89	.89	.891	.68	.76	.717	.95	.95	.949	.84	.86	.853	–	–	–	.89	.90	.896
ÚFAL–Oslo	.75	.74	.746	–	–	–	–	–	–	.76	.64	.695	.71	.42	.531	–	–	–	.27	.35	.306
	.83	.83	.830	–	–	–	–	–	–	.69	.72	.708	.78	.54	.635	–	–	–	.26	.43	.326
CUHK	.54	.54	.535	.05	.05	.049	–	–	–	.65	.55	.592	.20	.17	.183	–	–	–	.31	.25	.276
	.57	.57	.570	.11	.11	.110	–	–	–	.59	.61	.603	.20	.20	.201	–	–	–	.31	.32	.313
Anonymous	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peking	.82	.82	.815	.93	.92	.924	.93	.95	.942	.94	.93	.936	.90	.89	.896	–	–	–	.92	.92	.918
	.87	.87	.870	.89	.92	.907	.79	.88	.830	.94	.96	.949	.88	.90	.889	–	–	–	.90	.93	.914

Table 3: Detailed MRP scores for the EDS graphs.

	Tops			Labels			Properties			Anchors			Edges			Attributes			All		
	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F
ERG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUPA single	.94	.68	.787	-	-	-	-	-	-	.91	.56	.692	.11	.37	.170	.12	.22	.152	.20	.45	.276
	.97	.77	.860	-	-	-	-	-	-	.96	.63	.763	.19	.53	.283	.24	.24	.240	.31	.57	.401
TUPA multi	.87	.83	.849	-	-	-	-	-	-	.90	.52	.657	.08	.29	.130	.10	.08	.091	.17	.38	.236
	.90	.88	.889	-	-	-	-	-	-	.93	.67	.778	.19	.42	.265	.28	.14	.183	.34	.52	.410
HIT-SCIR	.00	.00	.000	-	-	-	-	-	-	.96	.95	.954	.74	.71	.727	.66	.58	.620	.83	.81	.817
	.00	.00	.000	-	-	-	-	-	-	.97	.97	.970	.75	.72	.731	.57	.42	.484	.84	.82	.826
SUDA-Alibaba	.00	.00	.996	-	-	-	-	-	-	.96	.94	.950	.70	.65	.677	.54	.33	.408	.81	.76	.784
	.99	.99	.990	-	-	-	-	-	-	.97	.98	.975	.75	.69	.718	.63	.27	.381	.85	.80	.821
SJTU-NICT	.95	.95	.953	-	-	-	-	-	-	.96	.96	.964	.67	.64	.656	.67	.36	.470	.80	.76	.778
	.94	.94	.940	-	-	-	-	-	-	.96	.97	.965	.63	.59	.613	.50	.26	.343	.77	.74	.755
ÚFAL MRPipe	.93	.47	.625	-	-	-	-	-	-	.95	.95	.954	.62	.57	.594	.51	.32	.393	.76	.71	.732
	.93	.39	.549	-	-	-	-	-	-	.96	.97	.962	.64	.57	.603	.60	.24	.342	.78	.71	.741
Hitachi	.00	.00	.997	-	-	-	-	-	-	.93	.92	.924	.58	.54	.559	.38	.14	.209	.72	.68	.704
	.99	.99	.990	-	-	-	-	-	-	.96	.96	.959	.63	.58	.605	.50	.10	.170	.78	.73	.750
Saarland	.68	.99	.809	-	-	-	-	-	-	.93	.89	.908	.55	.50	.527	-	-	-	.71	.65	.675
	.85	.98	.912	-	-	-	-	-	-	.96	.97	.967	.65	.61	.627	-	-	-	.78	.74	.762
JBNU	.91	.91	.914	-	-	-	-	-	-	.77	.80	.783	.33	.28	.303	.19	.11	.141	.53	.49	.507
	.91	.91	.910	-	-	-	-	-	-	.90	.92	.913	.47	.42	.441	.13	.07	.088	.66	.62	.636
HKUST	.99	.99	.989	-	-	-	-	-	-	.45	.48	.466	.53	.51	.517	.46	.20	.284	.51	.50	.502
	.97	.97	.970	-	-	-	-	-	-	.56	.58	.572	.62	.58	.599	.36	.17	.231	.61	.58	.592
SJTU	.91	.74	.818	-	-	-	-	-	-	.88	.53	.660	.17	.23	.194	.01	.02	.008	.31	.35	.327
	.90	.65	.756	-	-	-	-	-	-	.91	.56	.693	.19	.30	.234	-	.02	.007	.31	.40	.353
ÚFAL-Oslo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amazon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bocharov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ShanghaiTech	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking	.99	.99	.994	-	-	-	-	-	-	.96	.95	.954	.68	.66	.668	.27	.35	.309	.78	.77	.772
	.96	.96	.960	-	-	-	-	-	-	.97	.98	.972	.72	.67	.696	.29	.16	.204	.82	.78	.803
ÚFAL MRPipe	.93	.47	.625	-	-	-	-	-	-	.95	.95	.954	.62	.57	.595	.52	.32	.394	.76	.71	.732
	.93	.39	.549	-	-	-	-	-	-	.96	.97	.962	.64	.57	.601	.60	.24	.342	.78	.71	.740
CUHK	.99	.98	.983	-	-	-	-	-	-	.45	.47	.460	.04	.03	.032	-	-	-	.18	.22	.196
	.97	.97	.970	-	-	-	-	-	-	.51	.52	.518	.07	.05	.056	-	-	-	.22	.26	.235
ÚFAL-Oslo	.99	.69	.815	-	-	-	-	-	-	.32	.14	.191	.05	.01	.021	-	-	-	.23	.07	.112
	.96	.88	.917	-	-	-	-	-	-	.32	.26	.289	.06	.03	.037	-	-	-	.23	.14	.175
Anonymous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4: Detailed MRP scores for the UCCA graphs.

	Tops			Labels			Properties			Anchors			Edges			Attributes			All		
	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F
ERG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUPA single	.71	.58	.639	.53	.62	.572	.23	.22	.223	-	-	-	.33	.41	.364	-	-	-	.42	.48	.447
TUPA multi	.76	.68	.720	.50	.62	.555	.28	.25	.264	-	-	-	.33	.40	.364	-	-	-	.43	.51	.470
	.67	.56	.613	.33	.50	.398	.32	.24	.277	-	-	-	.23	.34	.274	-	-	-	.29	.41	.338
	.77	.69	.726	.50	.50	.501	.35	.14	.203	-	-	-	.34	.32	.331	-	-	-	.45	.42	.434
Amazon	.66	.66	.659	.84	.82	.829	.80	.74	.773	-	-	-	.66	.61	.636	-	-	-	.75	.71	.734
	.72	.72	.720	.77	.80	.787	.59	.59	.589	-	-	-	.64	.64	.640	-	-	-	.71	.72	.711
HIT-SCIR	.78	.78	.781	.86	.79	.825	.75	.68	.713	-	-	-	.69	.58	.632	-	-	-	.77	.69	.729
	.83	.83	.830	.78	.74	.762	.52	.52	.518	-	-	-	.65	.56	.604	-	-	-	.72	.66	.690
SJTU-NICT	.85	.85	.849	.82	.76	.788	.87	.72	.791	-	-	-	.66	.60	.626	-	-	-	.75	.69	.720
	.86	.86	.860	.78	.76	.766	.50	.46	.481	-	-	-	.65	.63	.638	-	-	-	.72	.70	.706
ÚFAL MRPipe	.86	.75	.801	.86	.79	.821	.75	.68	.715	-	-	-	.67	.56	.608	-	-	-	.77	.67	.718
	.87	.73	.793	.79	.77	.779	.76	.61	.673	-	-	-	.67	.58	.617	-	-	-	.74	.67	.707
SUDA-Alibaba	.63	.63	.629	.82	.81	.815	.77	.73	.750	-	-	-	.64	.60	.618	-	-	-	.73	.70	.717
	.70	.70	.700	.74	.79	.764	.68	.68	.679	-	-	-	.58	.59	.585	-	-	-	.67	.69	.679
Saarland	.87	.87	.869	.74	.74	.740	.78	.28	.408	-	-	-	.64	.60	.622	-	-	-	.70	.63	.667
	.87	.87	.870	.80	.81	.806	.69	.43	.527	-	-	-	.65	.63	.643	-	-	-	.74	.72	.731
ShanghaiTech	.87	.87	.868	.70	.76	.731	.51	.68	.585	-	-	-	.53	.55	.539	-	-	-	.61	.66	.636
	.84	.84	.840	.74	.76	.752	.48	.39	.431	-	-	-	.57	.58	.574	-	-	-	.66	.67	.668
Hitachi	.86	.86	.860	.54	.51	.522	.57	.14	.231	-	-	-	.37	.35	.357	-	-	-	.47	.41	.439
	.84	.84	.840	.53	.55	.540	.80	.07	.131	-	-	-	.35	.36	.356	-	-	-	.47	.47	.470
SJTU	.59	.48	.531	.44	.44	.438	.31	.38	.341	-	-	-	.37	.30	.330	-	-	-	.40	.37	.385
	.69	.66	.677	.51	.52	.514	.11	.11	.108	-	-	-	.40	.31	.348	-	-	-	.46	.42	.441
Bocharov	.83	.83	.833	.45	.35	.395	.06	.05	.057	-	-	-	.32	.26	.287	-	-	-	.37	.29	.327
	.86	.86	.860	.33	.45	.382	.09	.32	.136	-	-	-	.22	.37	.277	-	-	-	.28	.44	.342
ÚFAL-Oslo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
JBNU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HKUST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ÚFAL MRPipe	.86	.75	.802	.86	.79	.821	.75	.68	.714	-	-	-	.67	.56	.608	-	-	-	.77	.67	.718
	.88	.74	.804	.79	.77	.779	.76	.61	.673	-	-	-	.66	.57	.616	-	-	-	.74	.67	.707
ÚFAL-Oslo	.75	.62	.677	.70	.35	.468	.70	.21	.323	-	-	-	.40	.17	.238	-	-	-	.58	.27	.364
	.77	.77	.770	.68	.68	.680	.74	.36	.482	-	-	-	.32	.29	.304	-	-	-	.54	.50	.519
CUHK	.00	.96	.978	.07	.10	.082	-	-	-	-	-	-	.07	.10	.083	-	-	-	.06	.12	.081
	.00	.00	.000	.01	.01	.007	-	-	-	-	-	-	.01	.01	.007	-	-	-	.03	.08	.042
Peking	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anonymous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 5: Detailed MRP scores for the AMR graphs.

	Labeled			Unlabeled		
	P	R	F	P	R	F
ERG	.91	.91	.912	.92	.92	.920
	.93	.93	.929	.93	.94	.935
TUPA single	.65	.69	.670	.74	.73	.730
	.66	.71	.690	.74	.74	.740
TUPA multi	.51	.62	.562	.63	.66	.643
	.50	.63	.557	.62	.67	.647
ShanghaiTech	.94	.92	.930	.94	.93	.938
	.95	.94	.945	.95	.95	.949
HIT-SCIR	.93	.92	.925	.94	.93	.935
	.94	.94	.937	.94	.94	.942
SJTU-NICT	.93	.92	.924	.94	.93	.936
	.94	.93	.936	.95	.94	.946
Hitachi	.91	.93	.919	.92	.94	.929
	.92	.94	.927	.92	.94	.932
JBNU	.92	.90	.912	.93	.92	.923
	.93	.92	.926	.95	.94	.941
Saarland	.90	.91	.906	.92	.92	.918
	.91	.93	.919	.92	.93	.925
SUDA-Alibaba	.89	.91	.898	.91	.93	.918
	.88	.91	.895	.90	.93	.913
ÚFAL-Oslo	.90	.86	.880	.91	.88	.893
	.90	.88	.888	.91	.89	.899
Amazon	.87	.86	.866	.88	.88	.879
	.87	.87	.869	.88	.89	.882
ÚFAL MRPipe	.80	.70	.745	.82	.71	.760
	.81	.72	.759	.83	.73	.778
SJTU	.51	.30	.379	.58	.33	.416
	.45	.27	.335	.53	.29	.378
HKUST	.33	.27	.297	.65	.54	.591
	.33	.27	.299	.63	.53	.575
Bocharov	-	-	-	-	-	-
	-	-	-	-	-	-
Peking	.92	.92	.924	.93	.93	.934
	.93	.93	.925	.94	.94	.938
ÚFAL-Oslo	.90	.86	.880	.91	.88	.893
	.90	.88	.888	.91	.89	.899
ÚFAL MRPipe	.87	.90	.881	.88	.91	.893
	.87	.91	.893	.88	.92	.901
Anonymous	-	-	-	-	-	-
	-	-	-	-	-	-
CUHK	.10	.12	.108	.19	.22	.201
	.10	.12	.109	.19	.24	.209
Peking	-	-	-	-	-	-
	-	-	-	-	-	-

Table 6: Labeled and unlabeled SDP scores for DM.

	Labeled			Unlabeled		
	P	R	F	P	R	F
ERG	-	-	-	-	-	-
	-	-	-	-	-	-
TUPA single	.51	.60	.552	.71	.72	.714
	.55	.63	.585	.72	.75	.738
TUPA multi	.47	.53	.501	.65	.67	.660
	.52	.59	.553	.67	.71	.688
SJTU-NICT	.82	.81	.817	.93	.92	.925
	.81	.81	.810	.92	.93	.921
ShanghaiTech	.83	.81	.816	.93	.91	.921
	.82	.82	.819	.92	.92	.920
HIT-SCIR	.81	.81	.810	.92	.92	.918
	.79	.80	.794	.91	.92	.914
Hitachi	.80	.82	.808	.91	.93	.917
	.80	.82	.807	.91	.93	.921
JBNU	.80	.80	.800	.92	.91	.916
	.82	.81	.815	.93	.93	.927
Saarland	.80	.80	.796	.92	.91	.915
	.79	.80	.798	.90	.90	.901
ÚFAL-Oslo	.81	.73	.769	.90	.81	.856
	.82	.77	.795	.91	.86	.885
SUDA-Alibaba	.76	.76	.760	.89	.90	.895
	.75	.77	.759	.88	.90	.890
Amazon	.76	.72	.742	.88	.83	.857
	.77	.78	.771	.89	.89	.886
ÚFAL MRPipe	.69	.52	.594	.79	.60	.683
	.68	.45	.539	.79	.52	.628
HKUST	.45	.36	.398	.68	.54	.603
	.47	.36	.412	.70	.54	.608
SJTU	.49	.26	.340	.68	.35	.459
	.52	.28	.359	.68	.34	.457
Bocharov	-	-	-	-	-	-
	-	-	-	-	-	-
Peking	.81	.80	.808	.92	.91	.916
	.80	.80	.797	.91	.91	.908
ÚFAL MRPipe	.76	.79	.775	.86	.90	.875
	.77	.80	.782	.87	.90	.884
ÚFAL-Oslo	.81	.73	.769	.90	.81	.856
	.82	.77	.795	.91	.86	.885
CUHK	.06	.06	.057	.33	.35	.340
	.04	.05	.042	.34	.42	.373
Anonymous	-	-	-	-	-	-
	-	-	-	-	-	-
Peking	-	-	-	-	-	-
	-	-	-	-	-	-

Table 7: Labeled and unlabeled SDP scores for PSD.

	Tops			Names			Arguments			Properties			All		
	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F
ERG	.89	.89	.892	.95	.95	.948	.90	.90	.903	.96	.96	.962	.93	.92	.926
	.92	.92	.920	.96	.97	.963	.93	.93	.928	.85	.88	.863	.94	.95	.944
TUPA single	.67	.52	.585	.80	.76	.775	.75	.66	.701	.86	.86	.860	.77	.71	.741
	.75	.63	.685	.79	.77	.779	.76	.67	.711	.65	.68	.667	.77	.72	.744
TUPA multi	.55	.41	.471	.72	.69	.705	.64	.59	.616	.60	.63	.616	.68	.64	.656
	.56	.48	.519	.70	.70	.699	.66	.62	.640	.22	.40	.282	.67	.65	.660
SUDA–Alibaba	.88	.88	.884	.90	.90	.899	.89	.88	.886	.90	.91	.901	.90	.89	.893
	.93	.93	.930	.90	.91	.904	.90	.90	.903	.72	.84	.778	.90	.91	.903
SJTU–NICT	.93	.85	.885	.93	.85	.888	.94	.82	.874	.79	.76	.776	.93	.83	.877
	.97	.89	.927	.92	.88	.902	.95	.86	.902	.27	.24	.255	.93	.87	.897
HIT-SCIR	.87	.81	.836	.88	.87	.874	.86	.85	.857	.89	.91	.900	.87	.86	.866
	.90	.89	.894	.83	.84	.838	.87	.88	.875	.76	.88	.815	.85	.86	.857
ShanghaiTech	.85	.85	.853	.82	.81	.816	.81	.83	.821	.58	.90	.701	.81	.82	.814
	.87	.87	.870	.82	.82	.819	.85	.86	.851	.22	.80	.342	.81	.84	.825
Saarland	.78	.78	.779	.82	.80	.810	.79	.77	.778	.94	.67	.783	.80	.78	.794
	.88	.87	.874	.88	.87	.877	.85	.84	.845	.65	.60	.625	.87	.85	.860
Hitachi	.70	.71	.708	.78	.79	.782	.83	.78	.807	.48	.77	.588	.78	.78	.783
	.82	.84	.832	.73	.78	.754	.83	.80	.815	.04	.28	.068	.73	.79	.757
ÚFAL MRPipe	.64	.74	.683	.77	.56	.647	.68	.43	.525	.93	.30	.458	.73	.49	.587
	.68	.81	.736	.70	.51	.592	.62	.43	.507	.00	.32	.485	.67	.48	.560
SJTU	.54	.20	.288	.68	.40	.506	.64	.24	.347	.56	.52	.535	.66	.33	.435
	.63	.30	.405	.67	.44	.528	.61	.25	.355	.45	.36	.400	.64	.34	.449
ÚFAL–Oslo	.69	.69	.689	–	–	–	.69	.41	.515	–	–	–	.14	.21	.168
	.78	.78	.780	–	–	–	.76	.52	.619	–	–	–	.15	.27	.192
Amazon	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Bocharov	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
JBNU	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
HKUST	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peking	.82	.82	.821	.94	.93	.931	.92	.90	.910	.92	.96	.938	.93	.91	.919
	.89	.89	.890	.91	.92	.912	.91	.91	.909	.49	.88	.629	.90	.91	.906
ÚFAL MRPipe	.82	.81	.813	.90	.87	.885	.84	.82	.831	.93	.91	.920	.87	.85	.859
	.87	.85	.859	.90	.88	.890	.85	.85	.851	.72	.72	.720	.87	.87	.869
ÚFAL–Oslo	.69	.69	.689	–	–	–	.69	.41	.515	–	–	–	.14	.21	.168
	.78	.78	.780	–	–	–	.76	.52	.619	–	–	–	.15	.27	.192
CUHK	–	–	.002	.06	.04	.050	.05	.04	.049	–	–	–	.05	.04	.047
	.01	.01	.010	.12	.11	.115	.06	.06	.057	–	–	–	.08	.08	.083
Anonymous	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peking	.81	.81	.806	.90	.90	.898	.86	.86	.860	.92	.94	.929	.88	.88	.879
	.87	.87	.870	.89	.91	.900	.87	.89	.881	.79	.88	.830	.88	.90	.890

Table 8: Elementary Dependency Match (EDM) scores for EDS.

	labeled									unlabeled								
	primary			remote			all			primary			remote			all		
	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F	P	R	F
ERG	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUPA single	.41	.28	.331	.12	.19	.150	.28	.19	.224	.47	.30	.369	.13	.19	.157	.35	.22	.271
TUPA multi	.53	.41	.465	.33	.33	.331	.32	.25	.284	.58	.45	.509	.33	.33	.331	.38	.30	.331
TUPA multi	.30	.19	.233	.08	.06	.068	.28	.19	.224	.37	.23	.282	.09	.06	.074	.35	.22	.271
	.33	.26	.290	.21	.10	.137	.32	.25	.284	.38	.31	.339	.23	.10	.141	.38	.30	.331
HIT-SCIR	.68	.66	.671	.62	.55	.581	.68	.66	.667	.73	.71	.722	.62	.55	.583	.73	.70	.715
	.66	.64	.650	.62	.45	.523	.66	.63	.644	.70	.69	.699	.62	.45	.523	.70	.68	.691
SUDA-Alibaba	.67	.63	.649	.58	.32	.410	.66	.62	.639	.74	.70	.721	.59	.32	.412	.73	.68	.708
	.69	.65	.672	.71	.25	.370	.69	.63	.662	.74	.71	.721	.71	.25	.370	.74	.68	.709
SJTU-NICT	.63	.60	.614	.74	.34	.469	.63	.59	.609	.70	.68	.690	.75	.35	.473	.70	.66	.682
	.63	.58	.606	.60	.24	.342	.63	.57	.597	.72	.68	.698	.60	.24	.342	.72	.66	.685
ÚFAL MRPipe	.42	.38	.401	.39	.24	.298	.42	.38	.396	.46	.43	.448	.39	.24	.299	.46	.42	.441
	.48	.42	.449	.59	.23	.328	.48	.42	.445	.52	.48	.498	.61	.23	.331	.52	.46	.492
Hitachi	.40	.38	.389	.27	.10	.148	.39	.37	.381	.44	.43	.438	.28	.10	.151	.44	.42	.428
	.47	.46	.464	.39	.08	.132	.47	.44	.454	.52	.51	.514	.39	.08	.132	.52	.49	.502
Saarland	.34	.33	.333	-	-	-	.34	.31	.324	.38	.37	.374	-	-	-	.38	.35	.364
	.52	.51	.518	-	-	-	.52	.49	.505	.57	.58	.574	-	-	-	.57	.55	.559
HKUST	.21	.21	.207	.18	.07	.099	.21	.20	.203	.23	.24	.235	.18	.07	.100	.23	.23	.231
	.25	.24	.249	.22	.08	.117	.25	.24	.244	.29	.28	.283	.22	.08	.117	.28	.27	.278
JBNU	.19	.17	.181	.13	.08	.097	.19	.17	.177	.23	.20	.215	.13	.08	.097	.22	.20	.209
	.35	.32	.337	.04	.02	.029	.34	.31	.325	.41	.39	.399	.04	.02	.029	.40	.37	.384
SJTU	.05	.04	.046	.01	-	.006	.05	.04	.045	.07	.06	.066	.02	.01	.011	.07	.06	.063
	.06	.05	.056	.03	.01	.016	.06	.05	.055	.08	.07	.077	.06	.02	.033	.08	.07	.075
ÚFAL-Oslo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amazon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bocharov	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ShanghaiTech	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking	.65	.62	.637	.30	.32	.313	.63	.61	.620	.72	.69	.707	.31	.33	.317	.70	.68	.685
	.68	.64	.656	.33	.18	.234	.67	.62	.640	.73	.70	.717	.33	.18	.234	.72	.68	.698
ÚFAL MRPipe	.42	.38	.400	.39	.24	.298	.42	.38	.396	.46	.43	.447	.39	.24	.299	.46	.42	.441
	.47	.42	.447	.53	.20	.295	.48	.41	.442	.52	.47	.496	.55	.20	.297	.52	.46	.489
CUHK	.01	.01	.008	-	-	-	.01	.01	.007	.06	.04	.049	-	-	-	.06	.04	.048
	.02	.02	.018	-	-	-	.02	.01	.018	.14	.10	.112	-	-	-	.14	.09	.109
ÚFAL-Oslo	-	-	.002	-	-	-	-	-	.002	.05	.01	.022	-	-	-	.05	.01	.021
	-	-	.002	-	-	-	-	-	.001	.04	.02	.027	-	-	-	.04	.02	.026
Anonymous	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Peking	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 9: Labeled and unlabeled, primary vs. remote edge scores for UCCA.

Ivanova, and Yi Zhang. 2014. *SemEval 2014 Task 8. Broad-coverage semantic dependency parsing*. In *Proceedings of the 8th International Workshop on Semantic Evaluation*, pages 63–72, Dublin, Ireland.

	All		
	P	R	F
ERG	–	–	–
TUPA single	.41 .42	.47 .49	.438 .451
TUPA multi	.28 .42	.39 .40	.328 .411
Amazon	.75 .70	.71 .71	.730 .704
HIT-SCIR	.77 .71	.69 .65	.725 .680
ÚFAL MRPipe	.77 .74	.67 .67	.716 .700
SJTU–NICT	.75 .71	.68 .69	.714 .696
SUDA–Alibaba	.73 .66	.70 .69	.713 .674
Saarland	.70 .73	.63 .71	.661 .722
ShanghaiTech	.61 .65	.66 .66	.631 .659
Hitachi	.46 .45	.40 .45	.425 .453
SJTU	.39 .43	.36 .39	.373 .411
Bocharov	.35 .26	.28 .41	.314 .321
ÚFAL–Oslo	–	–	–
JBNU	–	–	–
HKUST	–	–	–
ÚFAL MRPipe	.77 .73	.67 .67	.716 .699
ÚFAL–Oslo	.56 .53	.26 .49	.351 .508
CUHK	.05 –	.09 .01	.060 .005
Peking	–	–	–
Anonymous	–	–	–
Peking	–	–	–

Table 10: SMATCH scores for AMR.