WEB TEST DEPENDENCY DETECTION
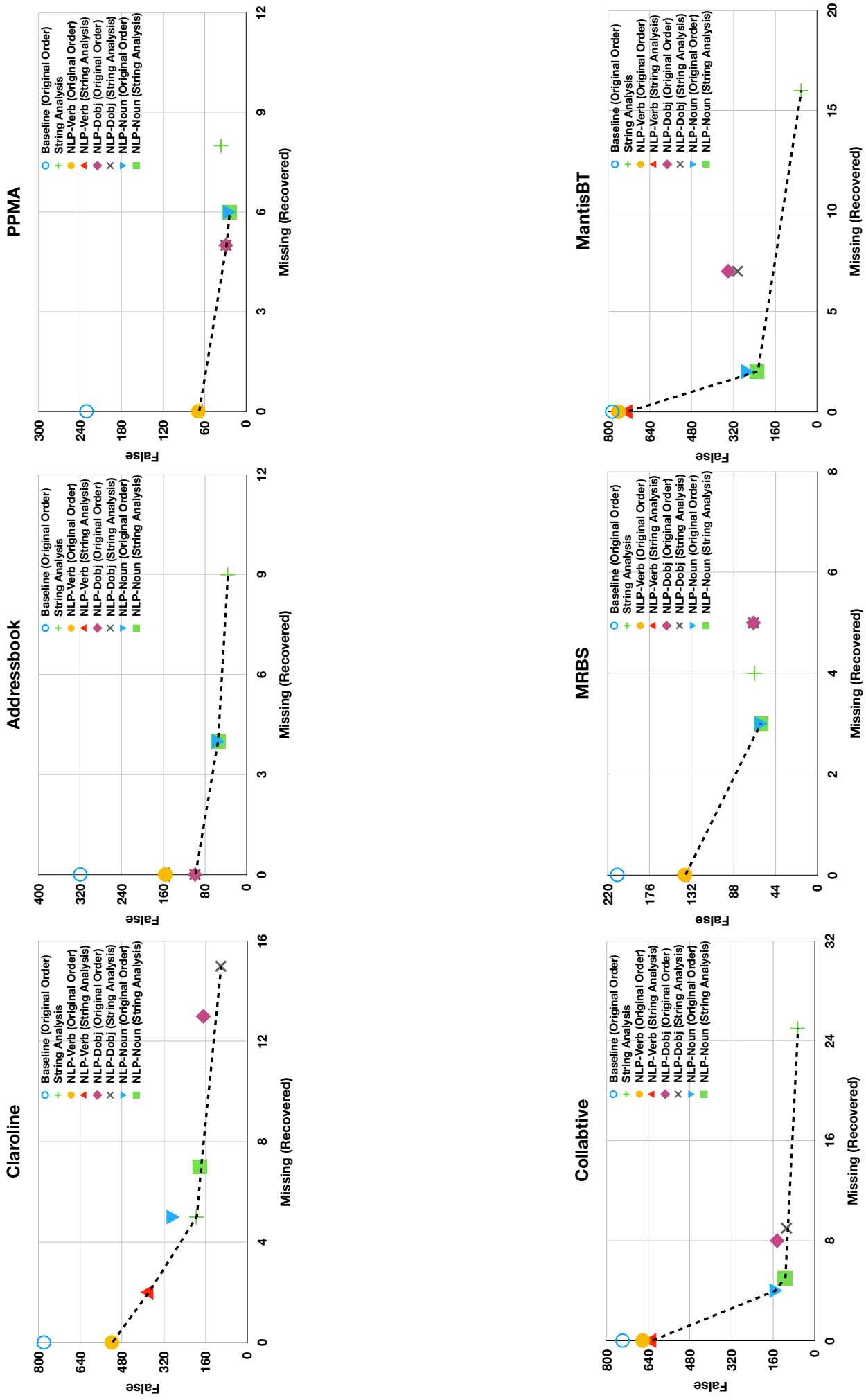
Supplementary Material for FSE 19 Submission

Figure 1: Pareto front for all subject systems.

Table 1: RQ1: effectiveness results for all subject systems. OO stands for Original Order, SA stands for String Analysis

	CLAROLINE								ADDRESSBOOK								PPMA								COLLABTIVE								MRBS								MANTISBT							
						Manifest Deps.								Manifest Deps.								Manifest Deps.								Manifest Deps.								Manifest Deps.								Manifest Deps.		
	Extracted	Filtered	To Validate	False	Validated	Recovered	Recovered (Disc.)	Total PRAW	Extracted	Filtered	To Validate	False	Validated	Recovered	Recovered (Disc.)	Total PRAW	Extracted	Filtered	To Validate	False	Validated	Recovered	Recovered (Disc.)	Total PRAW	Extracted	Filtered	To Validate	False	Validated	Recovered	Recovered (Disc.)	Total PRAW	Extracted	Filtered	To Validate	False	Validated	Recovered	Recovered (Disc.)	Total PRAW	Extracted	Filtered	To Validate	False	Validated	Recovered	Recovered (Disc.)	Total PRAW
Baseline (OO)	780	–	780	738	42	0	0	42	351	–	351	320	31	0	0	31	253	–	253	231	22	0	0	22	780	–	780	740	40	0	0	40	231	–	231	210	21	0	0	21	820	–	820	785	35	0	0	35
String Analysis	601	406	195	153	40	2	0	42	351	284	67	36	22	8	1	31	253	197	56	36	12	5	3	20	746	639	107	65	17	24	1	42	231	144	87	66	17	2	2	21	784	688	96	60	20	16	0	36
NLP-Verb (OO)	780	219	561	519	42	0	0	42	351	164	187	156	31	0	0	31	253	162	91	69	22	0	0	22	780	78	702	662	40	0	0	40	231	71	160	139	21	0	0	21	820	24	796	761	35	0	0	35
NLP-Verb (SA)	601	182	419	377	40	2	0	42	351	164	187	156	31	0	0	31	253	162	91	69	22	0	0	22	746	79	667	627	40	0	0	40	231	71	160	139	21	0	0	21	784	24	760	725	35	0	0	35
NLP-Dobj (OO)	780	570	210	168	29	13	0	42	351	220	131	99	32	0	0	32	253	202	51	29	17	4	1	22	780	595	185	144	33	8	0	41	231	141	90	67	18	3	2	23	820	442	378	340	31	7	0	38
NLP-Dobj (SA)	601	457	144	101	28	12	3	43	351	220	131	99	32	0	0	32	253	202	51	29	17	4	1	22	746	596	150	108	33	4	5	42	231	141	90	67	18	3	2	23	784	442	342	304	31	7	0	38
NLP-Noun (OO)	780	455	325	285	35	5	0	40	351	266	85	54	27	2	2	31	253	207	46	24	16	5	1	22	780	591	189	149	36	4	0	40	231	147	84	59	22	2	1	25	820	520	300	265	33	2	0	35
NLP-Noun (SA)	601	379	222	182	33	6	1	40	351	266	85	54	27	2	2	31	253	207	46	24	16	5	1	22	746	592	154	114	35	5	0	40	231	147	84	59	22	2	1	25	784	520	264	229	33	2	0	35

Table 2: RQ2: performance results for all subject systems. OO stands for Original Order, SA stands for String Analysis

| | CLAROLINE | | | | | | ADDRESSBOOK | | | | | | PPMA | | | | | | COLLABTIVE | | | | | | MRBS | | | | | | MANTISBT | | | | | |
| | | | Validation | | | | | | Validation | | | | | | Validation | | | | | | Validation | | | | | | Validation | | | | | | Validation | | |
	Extraction	Filtering	Val. and Recovery	Recovery (Disc.)	Total	Saving (%)	Extraction	Filtering	Val. and Recovery	Recovery (Disc.)	Total	Saving (%)	Extraction	Filtering	Val. and Recovery	Recovery (Disc.)	Total	Saving (%)	Extraction	Filtering	Val. and Recovery	Recovery (Disc.)	Total	Saving (%)	Extraction	Filtering	Val. and Recovery	Recovery (Disc.)	Total	Saving (%)	Extraction	Filtering	Val. and Recovery	Recovery (Disc.)	Total	Saving (%)
Baseline (OO)	0.00	-	614.40	-	614.40	-	0.00	-	88.20	-	88.20	-	0.00	-	79.80	-	79.80	-	0.00	-	1215.00	-	1215.00	-	0.00	-	78.60	-	78.60	-	0.00	-	472.20	-	472.20	-
String Analysis	0.11	0.00	106.94	4.82	111.86	81.79%	0.09	0.00	51.60	1.32	53.02	39.89%	0.08	0.00	36.00	17.09	53.17	33.37%	0.12	0.00	543.00	3.09	546.21	55.04%	0.08	0.00	36.00	1.28	37.36	52.46%	0.11	0.00	198.60	3.64	202.36	57.15%
NLP-Verb (OO)	0.00	0.05	228.60	1.78	230.43	62.50%	0.00	0.04	34.20	0.95	35.19	60.11%	0.00	0.00	18.00	0.16	18.20	77.20%	0.00	0.04	1065.60	2.08	1067.72	12.12%	0.00	0.04	45.00	0.11	45.15	42.55%	0.00	0.05	451.80	2.53	454.39	3.77%
NLP-Verb (SA)	0.10	0.04	183.60	1.81	185.55	69.80%	0.07	0.03	34.20	0.95	35.25	60.03%	0.07	0.03	18.00	0.16	18.26	77.12%	0.10	0.04	959.40	2.11	961.64	20.85%	0.07	0.03	45.00	0.11	45.21	42.49%	0.10	0.05	446.40	2.56	449.11	4.89%
NLP-Dobj (OO)	0.00	0.27	132.00	2.05	134.32	78.14%	0.00	0.22	27.00	0.92	28.14	68.09%	0.00	0.21	31.20	1.78	33.19	58.41%	0.00	0.26	342.00	2.18	344.44	71.65%	0.00	0.22	33.00	11.56	44.78	43.02%	0.00	0.26	244.20	2.26	246.72	47.75%
NLP-Dobj (SA)	0.10	0.25	96.60	16.24	113.19	81.58%	0.08	0.22	27.00	0.92	28.21	68.01%	0.06	0.22	31.20	1.78	33.26	58.32%	0.10	0.26	354.60	21.83	376.79	68.99%	0.10	0.26	33.00	11.56	44.84	42.96%	0.10	0.26	232.80	2.28	235.44	50.14%
NLP-Noun (OO)	0.00	0.06	147.00	1.58	148.64	75.81%	0.00	0.04	25.80	6.34	32.18	63.51%	0.00	0.04	30.60	1.61	32.25	59.58%	0.00	0.05	275.40	2.09	277.54	77.16%	0.00	0.05	32.40	1.13	33.58	57.28%	0.00	0.07	228.60	2.36	231.03	51.07%
NLP-Noun (SA)	0.10	0.04	103.80	10.93	114.87	81.30%	0.08	0.04	25.80	6.34	32.25	63.43%	0.06	0.04	30.60	1.61	32.31	59.51%	0.10	0.04	288.00	2.07	290.21	76.11%	0.07	0.04	32.40	1.13	33.63	57.21%	0.10	0.06	216.00	2.39	218.54	53.72%

Table 3: RQ3: parallelization results for all subject systems. OO stands for Original Order, SA stands for String Analysis

| | Baseline (OO) | | | | | | String Analysis | | | | | | NLP-Verb (OO) | | | | | | NLP-Verb (SA) | | | | | | NLP-Dobj (OO) | | | | | | NLP-Dobj (SA) | | | | | | NLP-Noun (OO) | | | | | | NLP-Noun (SA) | | | | | |
	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)	runtime original	schedules (#)	Worst case runtime	Worst case speed-up (%)	Average runtime	Average speed-up (%)
Claroline	75.08	36	28.37	2.65	9.10	8.25	75.08	36	30.31	2.55	10.32	7.49	75.08	36	76.76	2.66	9.41	8.16	75.08	36	28.75	2.66	9.25	8.26	75.08	35	28.38	2.65	9.60	7.83	75.08	35	28.94	2.63	9.72	7.84	75.08	36	29.20	2.64	9.31	8.26	75.1	36	28.96	2.69	9.42	8.26
Addressbook	40.23	24	20.47	1.96	9.41	4.27	40.23	24	39.61	1.83	10.05	3.94	40.23	24	21.48	1.82	9.87	3.97	40.23	24	21.48	1.82	9.87	3.97	40.23	24	21.62	1.85	9.13	4.39	40.23	24	21.62	1.85	9.13	4.39	40.23	24	20.15	1.98	8.76	4.55	40.2	24	20.15	1.98	8.76	4.55
PPMA	51.74	22	20.96	2.47	8.90	5.80	51.74	22	51.01	2.62	9.90	5.15	51.74	22	21.97	1.82	8.91	5.87	51.74	22	21.97	1.82	8.91	5.87	51.74	22	20.76	2.51	8.93	5.84	51.74	22	20.76	2.51	8.93	5.84	51.74	22	21.14	2.45	8.92	5.80	51.7	22	21.14	2.45	8.92	5.80
Collabtive	297.71	37	116.66	2.55	48.97	6.08	297.71	37	116.36	2.62	50.00	6.11	297.71	37	121.31	2.61	50.14	6.31	297.71	37	120.41	2.55	50.07	6.14	297.71	37	141.07	2.17	59.24	5.17	297.71	37	138.41	2.22	55.51	5.52	297.71	37	152.43	1.99	61.77	4.92	297.7	37	133.13	2.28	53.18	5.71
MRBS	56.87	21	23.81	2.39	10.56	5.39	56.87	12	24.95	2.20	11.20	4.90	56.87	21	23.47	2.41	10.89	5.20	56.87	21	23.47	2.41	10.89	5.20	56.87	20	26.05	2.20	12.74	4.50	56.87	20	26.05	2.20	12.74	4.50	56.87	20	28.68	2.00	13.79	4.15	56.9	20	28.68	2.00	13.79	4.15
MantisBT	184.52	37	133.48	1.38	14.30	12.90	184.52	37	71.76	2.57	12.42	14.86	184.52	37	133.96	1.38	14.26	12.96	184.52	37	133.89	1.39	14.28	13.05	184.52	37	133.53	1.38	15.03	12.28	184.52	37	133.37	1.38	15.09	12.17	184.52	37	133.59	1.38	14.82	12.44	184.5	37	133.79	1.39	15.12	12.30