Assignment 4 writeup

Left right stroke oracle — OBJECTS

	Recall(%)	Prec(%)	2RP/(R+P)	Targets	Correct	FalseNeg	*Detected	*FalsePos
Objects	38.45	28.33	32.62	85783	32982	52801	116439	83457
+ Classes	35.41	26.08	30.04	85783	30373	55410	116439	86066
Class/Det	92.09			32982	30373			
Relations	7.23	13.79	9.49	77849	5630	72219	40830	35200
+ Classes	6.07	11.58	7.97	77849	4728	73121	40830	36102
Class/Det	83.98			5630	4728			

2RP/(R+P): harmonic mean (f-measure) for (R)ecall and (P)recision
Class/Det: (correct detection and classification) / correct detection

FILES

	Rate(%)	Total	Correct	Errors
Objects	11.28	8836	997	7839
+ Classes	10.84	8836	958	7878
Class/Det	96.09	997	958	
Relations	10.51	8836	929	7907
+ Classes	10.51	8836	929	7907
Class/Det	100.00	929	929	
Structure	7.92	8836	700	8136
+ Classes	7.92	8836	700	8136 *Final
Class/Det	100.00	700	700	

Left right symbol oracle — OBJECTS

	Recall(%)	Prec(%)	2RP/(R+P)	Targets	Correct	FalseNeg	*Detected	*FalsePos
Objects	100.00	100.00	100.00	85783	85781	2	85782	1
+ Classes	99.27	99.27	99.27	85783	85160	623	85782	622
Class/Det	99.28			85781	85160			
Relations	71.31	72.19	71.75	77849	55517	22332	76909	21392
+ Classes	54.84	55.51	55.17	77849	42689	35160	76909	34220
Class/Det	76.89			55517	42689			

2RP/(R+P): harmonic mean (f-measure) for (R)ecall and (P)recision
Class/Det: (correct detection and classification) / correct detection

FILES

	Rate(%)	Total	Correct	Errors
Objects	99.99	8836	8835	1
+ Classes	95.69	8836	8455	381
Class/Det	95.70	8835	8455	
Relations	41.16	8836	3637	5199
+ Classes	33.00	8836	2916	5920
Class/Det	80.18	3637	2916	
Structure	41.15	8836	3636	5200
+ Classes	31.59	8836	2791	6045 *Final
Class/Det	76.76	3636	2791	

Minimum spanning tree stroke oracle — OBJECTS

	Recall(%)	Prec(%)	2RP/(R+P)	Targets	Correct	FalseNeg	*Detected	*FalsePos
Objects	38.45	28.33	32.62	85783	32982	52801	116439	83457
+ Classes	35.41	26.08	30.04	85783	30373	55410	116439	86066
Class/Det	92.09			32982	30373			
Relations	9.70	10.26	9.97	77849	7554	70295	73643	66089
+ Classes	7.94	8.39	8.16	77849	6181	71668	73643	67462
Class/Det	81.82			7554	6181			

2RP/(R+P): harmonic mean (f-measure) for (R)ecall and (P)recision
Class/Det: (correct detection and classification) / correct detection

FILES

	Rate(%)	Total	Correct	Errors
Objects	11.28	8836	997	7839
+ Classes	10.84	8836	958	7878
Class/Det	96.09	997	958	
Relations	10.51	8836	929	7907
+ Classes	10.51	8836	929	7907
Class/Det	100.00	929	929	
Structure	7.92	8836	700	8136
+ Classes	7.92	8836	700	8136 *Final
Class/Det	100.00	700	700	

Minimum spanning tree symbol oracle — OBJECTS

	Recall(%)	Prec(%)	2RP/(R+P)	Targets	Correct	FalseNeg	*Detected	*FalsePos
Objects	100.00	100.00	100.00	85783	85781	2	85782	1
+ Classes	99.27	99.27	99.27	85783	85160	623	85782	622
Class/Det	99.28			85781	85160			
Relations	39.68	100.00	56.81	77849	30890	46959	30890	0
+ Classes	39.68	100.00	56.81	77849	30890	46959	30890	0
Class/Det	100.00			30890	30890			

2RP/(R+P): harmonic mean (f-measure) for (R)ecall and (P)recision
Class/Det: (correct detection and classification) / correct detection

FILES

	Rate(%)	Total	Correct	Errors
Objects	99.99	8836	8835	1
+ Classes	95.69	8836	8455	381
Class/Det	95.70	8835	8455	
Relations	20.79	8836	1837	6999
+ Classes	20.79	8836	1837	6999
Class/Det	100.00	1837	1837	
Structure	20.79	8836	1837	6999
+ Classes	20.79	8836	1837	6999 *Final
Class/Det	100.00	1837	1837	

For the sake of compare the results in lgeval and confHist, I move all the files in the given lg file from subdirectories to main directory.

Results:

The "Object" and "Files" sections for four oracle parsers is shown above.

Analysis:

Comparing the stroke oracle and symbol oracle, we can conclude that the rates in 'Objects' for symbol oracle are round 100%, while the rates in 'Objects' for stroke oracle are around 30%. This shows that the 'objects' in given lg file are calculated by symbols. The rates in 'Relationship' for symbol oracles are also higher than that for stroke oracles.

Comparing the left-right oracle and minimum spanning tree oracle, we find that though the relationship rate for left-right oracle is higher than that for minimum spanning tree oracle, it does not mean that the left-right oracle is a better method. It just means that the dataset has large proportion of single line formulation that exactly satisfy the 'Right' tag.
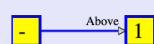
The most common errors in confHist for each condition are shown below. These results show that in order to design a parser to recognize the CHROME training set accurately, the left-right method should not be used and minimum spanning tree method can be used combining with other methods to improve the accuracy.

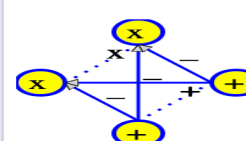| Object Targets	Primitive Targets and Errors				
1 5609 errors	Targets				
	1 5465 errors	3511 errors	162 errors	161 errors	139 errors
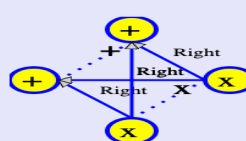
Left right stroke oracle

Object Targets	Primitive Targets and Errors			
1 1059 errors	Targets			
	1 1011 errors	655 errors	292 errors	64 errors

Left right symbol oracle

Object Targets	Primitive Targets and Errors				
1 1009 errors	Targets				
	1 961 errors	440 errors	79 errors	20 errors	13 errors

Minimum spanning tree stroke oracle

Object Targets	Primitive Targets and Errors	
1 737 errors	Targets	
	1 648 errors	648 errors

Minimum spanning tree symbol oracle