

4D

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*가

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4D event extraction from subtitles and scenario information

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3D 4D 가 가 , 4D
4D 4D 4D 4D
4D 4D

1.

3D 4D 3D 가
4D [1].
4D 4D



2.

4D 4D

2.1

(1) 4D

(1)

2.2

Korea Language Technology(KLT)[2] 4D

4D 4D 가 (sync)

가 4D 가 1/1000 가

SVM[3]

6 4D

(likelihood)가 2 4D 가 4D

2.3 4D

4D 6 4D (, , , ,) . 4D 39 , 7 57 , 가 0~5 , 5 가 . 5 < 1> 5 가 < 1> 4D

	2	3	4	4	2	0
	2	0	1	1	5	0
	5	4	0	0	1	0
	4	4	2	3	0	0
	5	1	1	0	2	1
	3	2	1	2	1	1
	5	1	1	0	2	1

< 1> 4D

2.4 4D

4D SVM SVM SVM(Support Vector Machine) Vapnik supervised learning LIBSVM[4] 4D SVM

3. 가

4D 15 . 15 13 SVM (precision), (recall), F1-measure [5-6].

$$(P) = \frac{TP}{TP + FP} \quad (1)$$

$$(R) = \frac{TP}{TP + FN} \quad (2)$$

$$F_1(R, P) = \frac{2RP}{R + P} \quad (3)$$

(sync)

< 2>

	start	end	
0	6136413	6139740	~ ~
0	6169474	6175490	~ ! !
0	6183050	6186069	~~
2	5447775	5449640	?
1	5188516	5189574	, !
1	5754548	5755913	가 !
1	5689368	5694041	
1	5709914	5715087	 !
0	4978974	4979941	
0	5094456	5095616	

< 2> 4D :

, F1-measure

< 3>

4D	Precision	Recall	F1-measure
	0.968354	0.9107143	0.938650307
	0.117647	0.3333333	0.173913043
	1	0.5	0.666666667
	0	0	0
	0	0	0
	0	0	0
	0	0	0

< 3>

4D

(likelihood)가

가 2

(2)

4D 2



(2) 4D :

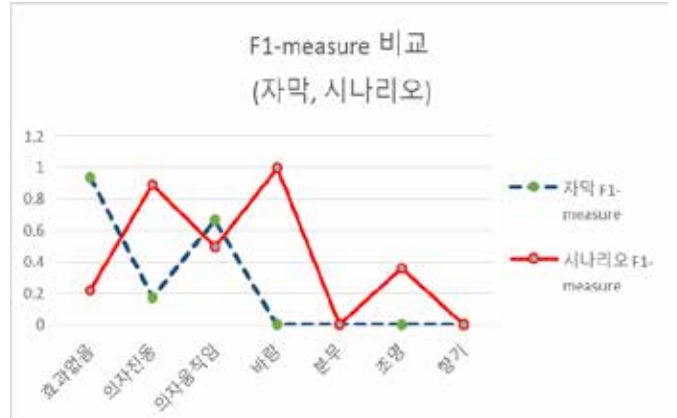
1	2	
1	5	
1	2	가
1	5	
1	5	
5	0	가
2	6	
1	2	! 가
1	2	
3	4	
1	2	, !

< 4 > 4D :

4D	Precision	Recall	F1-measure
	0.2	0.25	0.22222222
	0.978723	0.821429	0.89320388
	0.333333	1	0.5
	1	1	1
	0	0	0
	0.333333	0.4	0.36363636
	0	0	0

< 5 > 4D

(3) F1-measure 가 , 4D 4D



(3) F1-measure (,)

, 4D 4D

4.

4D (sync) 4D 4D 4D 4D (multi-modal fusion)

5.

가 2013 방송(ICT)

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