

# The CUED's Grammatical Error Correction Systems for BEA-2019

Felix Stahlberg and Bill Byrne

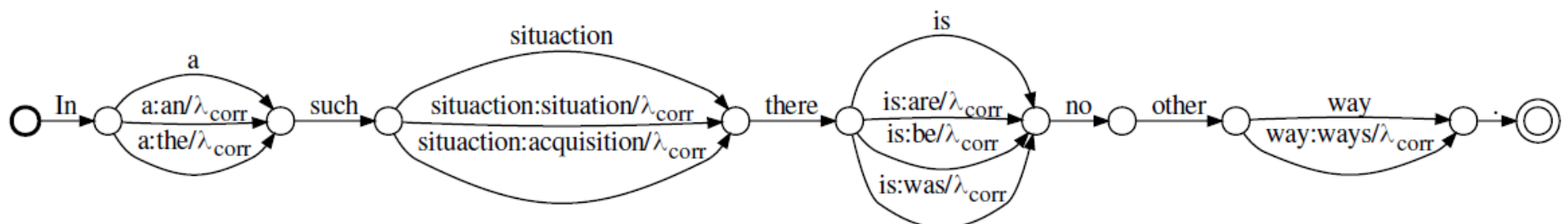


UNIVERSITY OF  
CAMBRIDGE

Department of Engineering

## Low-resource Track

- We use a cascade of FST composition operations to construct the search space.
- We then rescore the constructed FST with a neural Transformer LM.



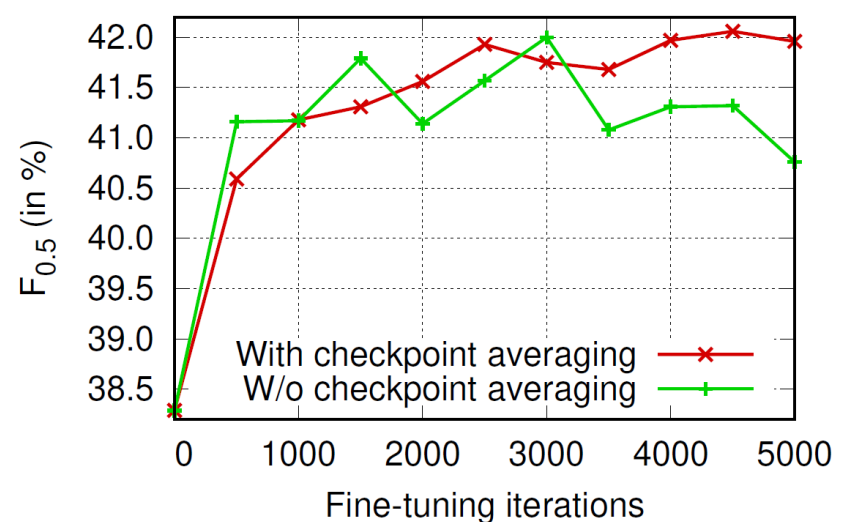
Sub	Del	Ins	LM	Beam	CoNLL-2014			BEA-2019 Dev		
					P	R	M2	P	R	ERRANT
Best published: Stahlberg et al. (2019)					54.12	25.52	44.21	n/a		
✓			1x	8	58.59	24.14	45.58	42.44	14.68	30.79
✓	✓		1x	8	59.01	26.07	47.11	41.21	16.47	31.69
✓	✓	✓	1x	8	52.89	26.68	44.20	40.09	19.97	33.36
✓	✓	✓	2x	8	54.05	26.71	44.87	40.70	20.01	33.73
✓	✓	✓	2x	16	57.05	27.22	46.80	42.02	19.76	34.29
✓	✓	✓	2x	32	58.48	28.21	48.15	42.37	19.92	34.58

## Restricted Track

- Identity removal controls the balance between precision and recall

Identity Removal	CoNLL-2014			BEA-2019 Dev		
	P	R	M2	P	R	ERR.
×	59.16	17.20	39.76	40.40	16.67	31.44
✓	53.34	28.83	45.59	33.04	23.14	30.44

- We fine-tune on W&I+LOCNESS using cont'd training and checkpoint averaging



- The ratio between synthetic and real training sentences can be much higher than for MT

Over-sampling Rate (Real Data)	Number of Synthetic Sentences	Ratio	CoNLL-2014			BEA-2019 Dev		
			P	R	M2	P	R	ERRANT
1x	0	-	53.34	28.83	45.59	33.04	23.14	30.44
1x	1M	1:1.6	56.17	31.30	48.47	37.79	23.86	33.84
1x	3M	1:4.8	61.40	34.29	53.02	42.62	25.30	37.49
1x	5M	1:7.9	64.18	34.27	54.64	44.69	25.59	38.88
3x	3M	1:1.6	57.12	32.55	49.63	40.08	24.79	35.68
6x	5M	1:1.3	59.15	33.99	51.52	41.52	25.05	36.69