

Contrastive Triple Extraction with Generative Transformer

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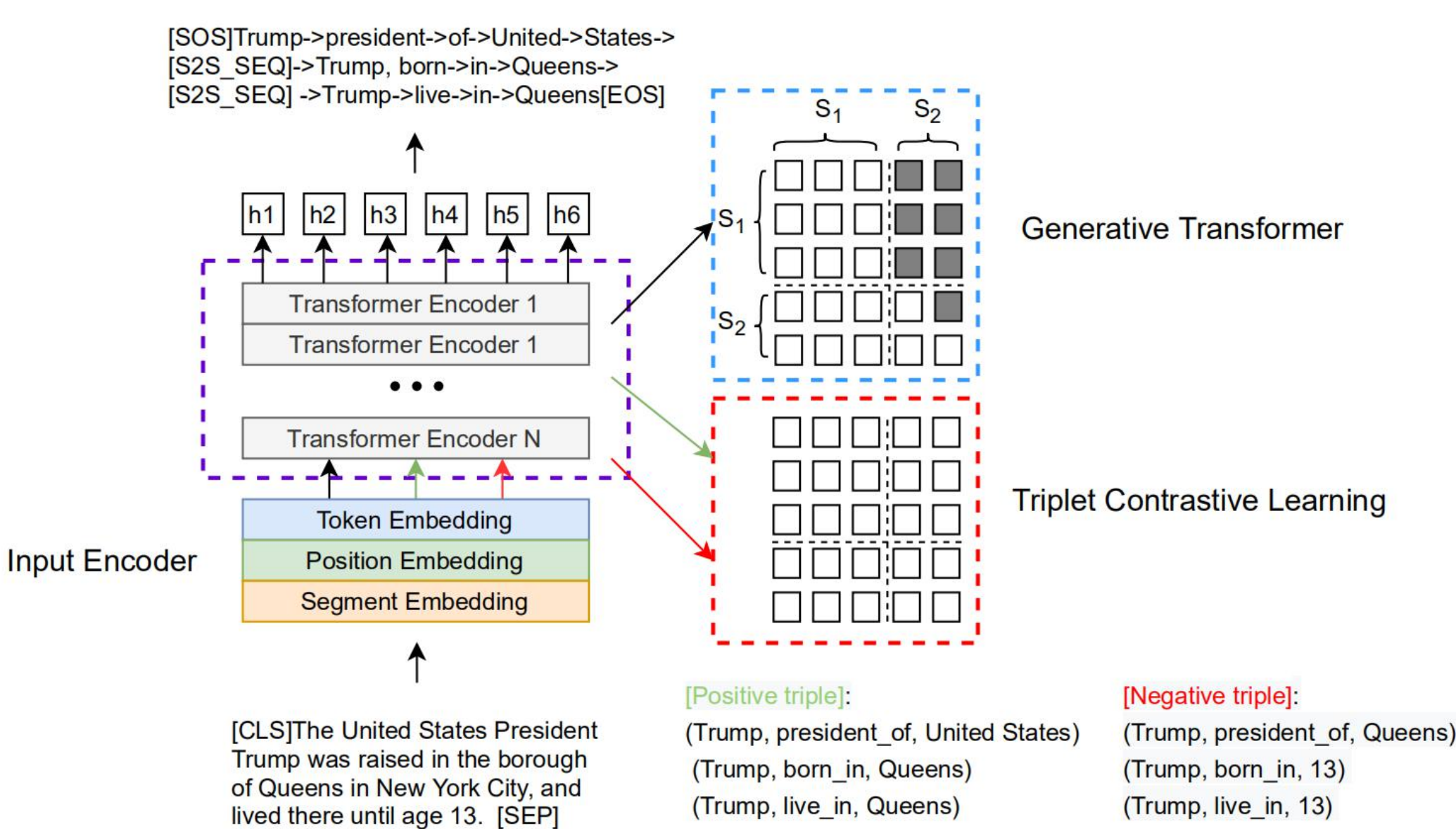


Introduction

Input	The <i>United States</i> President <i>Trump</i> was raised in the borough of <i>Queens</i> in <i>New York City</i> , and lived there until age 13.
Output	Trump→president→of→United→States→[S2S_SEQ]→Trump→born→in→Queens→[S2S_SEQ]→Trump→live→in→Queens
Gold	(Trump, president_of, United States) (Trump, born_in, Queens) (Trump, live_in, Queens)
Negative	(Trump, president_of, Queens) (Trump, born_in, 13) (Trump, live_in, 13)

Contrastive triple extraction as sequence generation. We encourage the model to generate gold triples and does not generate negative ones.

Model



The architecture of Contrastive triple extraction with Generative Transformer (CGT).

Experiments

Model		NYT			WebNLG		
		P	R	F	P	R	F
Extractive	Tagging (Zheng et al. 2017b)	61.5	41.4	49.5	-	-	-
	HRL(Takanobu et al. 2019)	71.4	58.6	64.4	53.8	53.8	53.8
	MrMep (Chen et al. 2019)	77.9	76.6	77.1	69.4	77.0	73.0
	CasRel (Wei et al. 2020b)	89.7	89.5	89.6	93.4	90.1	91.8
Generative	CopyRE (Zeng et al. 2018b)	61.0	56.6	58.7	37.7	36.4	37.1
	PNDac (Nayak and Ng 2019)	80.6	77.3	78.9	38.1	36.9	37.5
	CopyMTL (Zeng, Zhang, and Liu 2020)	75.7	68.7	72.0	58.0	54.9	56.4
Ours	CGT(Random)	90.8	77.7	83.7	87.6	70.5	78.1
	CGT(UniLM)	<b>94.7</b>	84.2	89.1	<b>92.9</b>	75.6	83.4
	w/o contrastive	87.3	81.5	84.3	94.6	70.5	80.8

Main results of NYT and WebNLG.

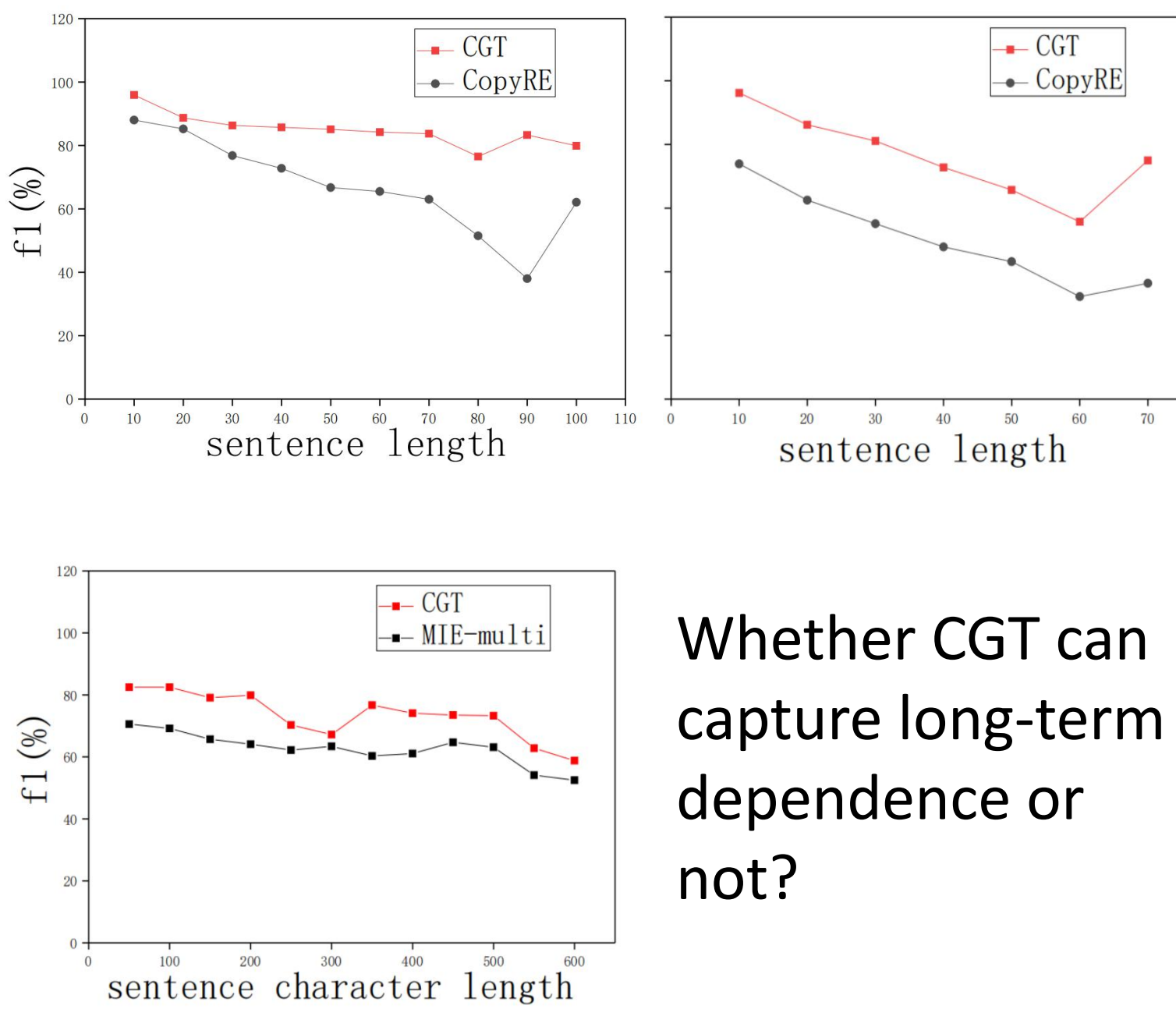
Instance

instance #1	Batchoy is originates from the Philippines and served as a soup.Its main ingredients are noodles, pork organs, vegetables, chicken, shrimp and beef. generated triple: <i>&lt;Batchoy, location, Philippines&gt;</i> ground truth: <i>&lt;Batchoy, country, Philippines&gt;</i>
instance #2	Alan Shepard was a crew member of NASA operated Apollo 14 who died in California which is represented by Dianne Feinstein. generated triple: <i>&lt;Shepard, deathPlace, California&gt;</i> ground truth: <i>&lt;Allan Shepard, deathPlace, California&gt;</i>
instance #3	Saranac Lake, which is served by Adirondack Regional Airport, is part of Harrietstown, Essex County, New York, US. generated triple: <i>&lt;Airport, cityServed, New York&gt;</i> ground truth: <i>&lt;Airport, cityServed, York&gt;</i>

Error anslysis.

Model	P	R	F1
Bi-LSTM	53.13	49.46	50.69
MIE-multi	70.24	64.96	66.40
CGT(random)	70.75	66.96	68.80
CGT(UniLM)	<b>80.53</b>	<b>78.83</b>	<b>79.42</b>

Main results on the MIE dataset.



Whether CGT can capture long-term dependence or not?