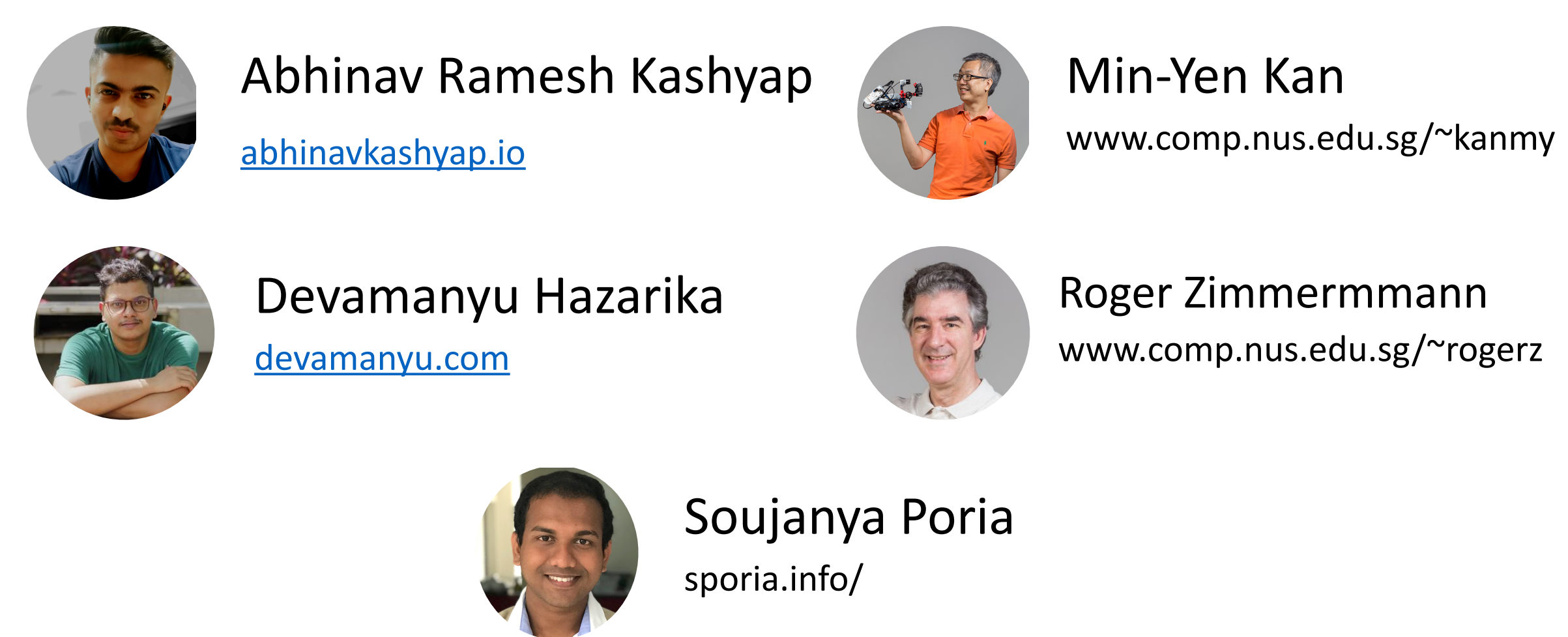
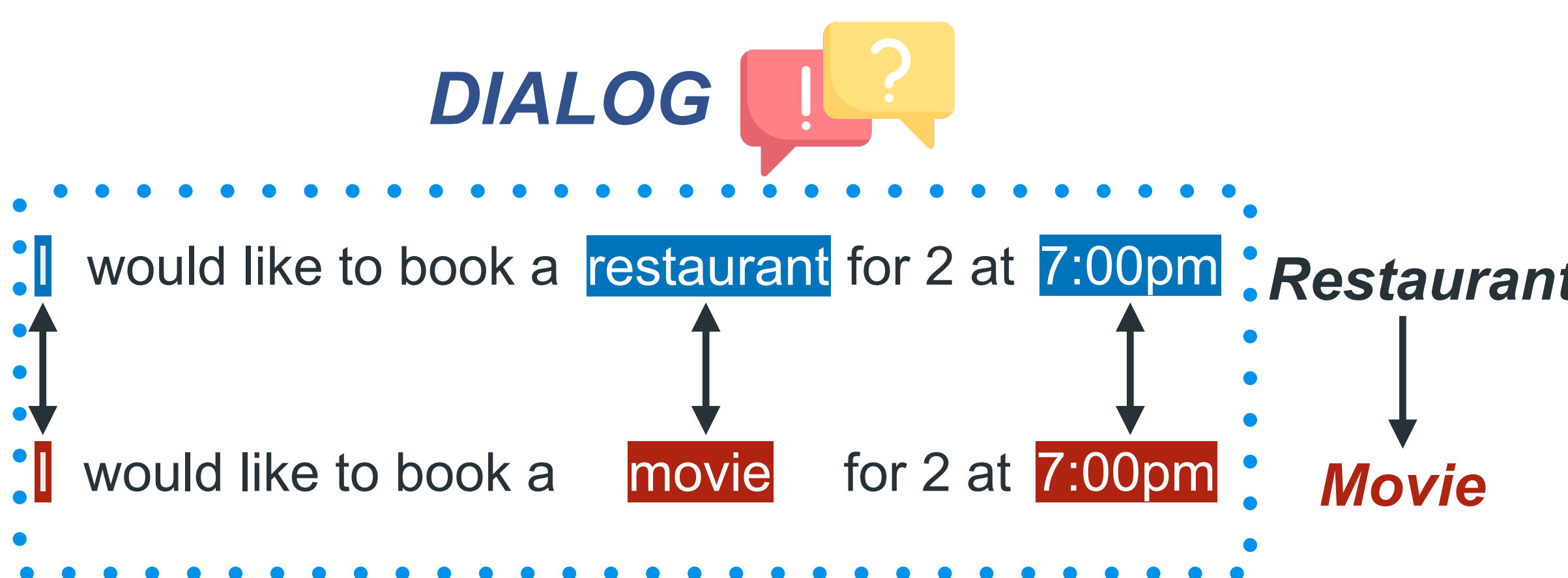


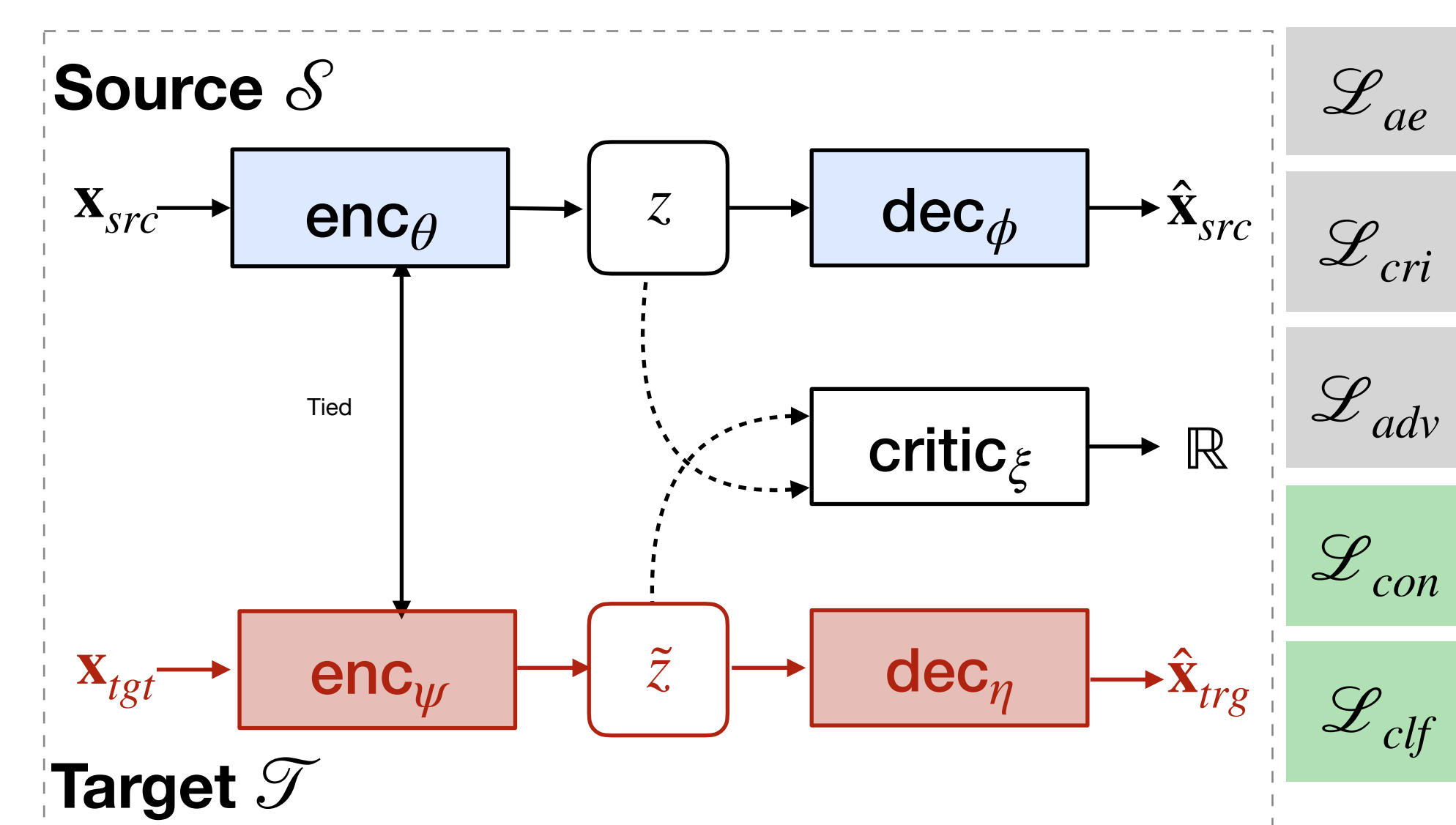
So Different Yet so Alike! Unconstrained Unsupervised Text Style Transfer



BACKGROUND: Unsupervised methods for text style transfer do not maintain the constraints when transferred. Many applications of text style transfer require constraints to be maintained



Method



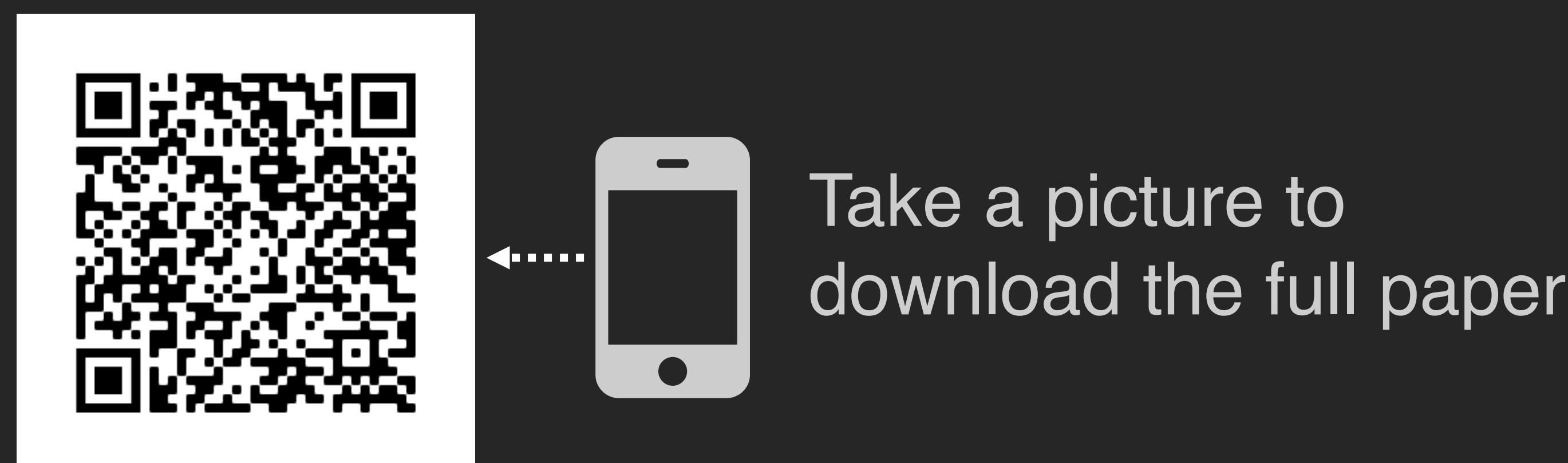
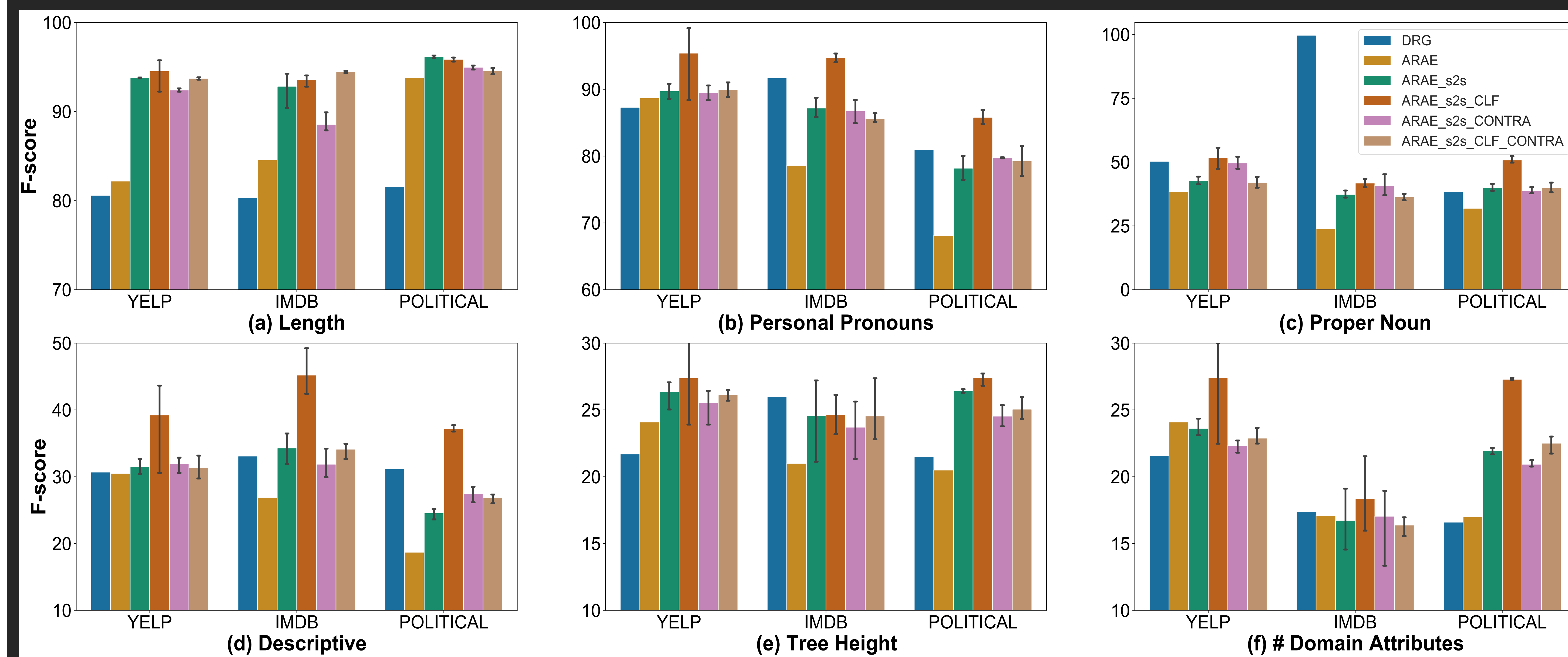
Results

Model	Sampling	YELP				IMDB				POLITICAL			
		ACC	FL	SIM	AGG	ACC	FL	SIM	AGG	ACC	FL	SIM	AGG
DRG	Greedy	67.4	54.5	43.6	16.7	56.5	44.3	54.1	14.4	61.3	35.7	38.7	8.8
ARAE	Greedy	93.1	67.9	31.2	19.8	95.0	76.3	26.4	19.9	63.0	72.1	17.3	11.0
ARAE +CLF +CONTRA	Greedy	89.3	69.2	32.9	20.6	97.8	84.0	33.5	28.1	99.0	56.8	41.8	24.9
	nucleus (p=0.6)	89.4	68.6	32.8	20.4	97.1	82.6	33.6	27.4	99.0	56.0	41.6	24.4

Conclusions

We introduced two cooperative losses to ARAE to regularise the latent space
We improve the general quality of translating sentences from one domain to another
In addition, we maintain the constraints between the domains in a better manner

Regularising the latent space of a Adversarially Regularised Auto- encoder (ARAE) helps in maintaining constrains during Style Transfer



Text Style Transfer + Constraints

Contrastive Loss

$$\mathcal{L}_{con}(\theta, \psi, \xi) = -\frac{1}{|P|} \log \left(\sum_{j=1}^P \frac{e^{(\mathbf{z}_i \cdot \mathbf{z}_j)}}{\sum_{k=1}^B \frac{e^{(\mathbf{z}_i \cdot \mathbf{z}_k)}}{e^{(\mathbf{z}_i \cdot \mathbf{z}_k)}}} \right)$$

Classifier Loss

$$\mathcal{L}_{clf}(\theta, \phi, \xi, \delta) = -\sum_{c=1}^{|G|} \log \left(\sigma(l_c)^{y_c} (1 - \sigma(l_c))^{1-y_c} \right)$$

Removing Loss on Generator and Critic

Model	ACC	FL	SIM	AGG
ARAE + CLF	95.0	83.2	34.2	27.5
-generator	96.2	87.2	31.3	26.7
-critic	94.9	84.4	30.8	25.5

Model	ACC	FL	SIM	AGG
ARAE + CONTRA	96.1	80.6	36.0	28.6
-generator	93.5	78.8	34.0	26.0
-critic	90.1	67.8	39.5	24.9

Multi-attribute Dataset

Examples

Constraint	Method	Sentence
Personal Pronoun	Source(IMDB)	jean seberg had not one iota of acting talent.
	Ours	michael keaton was also great in his role.
	ARAE	john abraham had one of my favorite roles .
Proper Noun	Source(IMDB)	chris klein's character was unlikable from the start and never made an improvement
	Ours	robert de niro was very good as the man and she's never been
	ARAE	both of his character was made and had a huge smile on me