

A Supplementary Material

In Tables 1, 2, and 3 we present the style transfer accuracy results broken-down to style categories. We denote the Cross-aligned Auto-Encoder model as CAE and our model as **Back-translation for Style Transfer (BST)**.

Model	Style transfer	Acc
CAE	male → female	64.75
BST	male → female	54.59
CAE	female → male	56.05
BST	female → male	59.49

Table 1: Gender transfer accuracy.

Model	Style transfer	Acc
CAE	republican → democratic	65.44
BST	republican → democratic	80.55
CAE	democratic → republican	86.20
BST	democratic → republican	95.47

Table 2: Political slant transfer accuracy.

Model	Style transfer	Acc
CAE	negative → positive	81.63
BST	negative → positive	95.68
CAE	positive → negative	79.65
BST	positive → negative	81.65

Table 3: Sentiment modification accuracy.

In Table 4, we detail the accuracy of the gender classifier on generated style-transferred sentences by an auto-encoder; Table 5 shows the accuracy of transfer of political slant. The experiments are setup as described in Section 5.1. We denote the Auto-Encoder as (AE) and our model as Back-translation for Style Transfer (BST).

Model	Style transfer	Acc
AE	male → female	41.48
BST	male → female	54.59
AE	female → male	41.88
BST	female → male	59.49

Table 4: Gender transfer accuracy for Auto-encoder.

To evaluate the preservation of meaning by the Auto-Encoder, the experiments were setup as described in Section 5.2. We conducted four tests,

Model	Style transfer	Acc
AE	republican → democratic	60.76
BST	republican → democratic	80.55
AE	democratic → republican	64.05
BST	democratic → republican	95.47

Table 5: Political slant transfer accuracy for Auto-encoder.

each of 20 random samples for each type of style transfer. Note that we did not ask about appropriateness of the style transfer in this test, or fluency of outputs, only about meaning preservation. We show the results of human evaluation in Table 6

Style transfer	=	AE	BST
male → female	43.3	13.4	43.3
female → male	45.0	10.0	45.0
republican → democratic	43.3	3.4	53.3
democratic → republican	55.00	11.7	33.3

Table 6: Human preference for meaning preservation in percentages.

Examples of the original and style-transferred sentences generated by the baseline and our model are shown in Table 7

Input Sentence	CAE	BST
male → female		
<i>my wife ordered country fried steak and eggs. great place to visit and maybe find that one rare item you just have never seen or can not find anywhere else. the place is small but cosy and very clean.</i>	<i>i got ta get the chicken breast . we could n't go back and i would be able to get me to get me. the staff and the place is very nice.</i>	<i>my husband ordered the chicken salad and the fries. great place to go back and try a lot of which you ' ve never had to try or could not have been able to get some of the best. the place is great but very clean and very friendly.</i>
female → male		
<i>save yourself the huge headaches. would i discourage someone else from going? my husband ordered the salad and the dressing - lrb - blue cheese - rrb - was watered down.</i>	<i>the sauces are excellent. i believe i would be back? the sauces - lrb - - rrb - - rrb - and - rrb - .</i>	<i>you are going to be disappointed. i wouldn't go back! my wife ordered the mac-n-cheese and the salad - lrb - \$ 00 minutes - rrb - was cooked.</i>
republican → democratic		
<i>i will continue praying for you and the decisions made by our government! tom, i wish u would bring change. all talk and no action-why dont you have some guts like breitbart</i>	<i>i am proud of you and your vote for us! i agree, senator warren and could be. and then we will be praying for them and i am proud of this position and i am proud of</i>	<i>i will continue to fight for you and the rest of our democracy! brian, i am proud to have you representing me. keep up and dont know, you have a lot of respect as breitbart</i>
democratic → republican		
<i>as a hoosier, i thank you, rep. visclosky. thank you for standing up for justice and against bigotry-racism, homophobia, sexism , misogyny, religious and xenophobia. thank you for all you are doing for us, attorney general harris!</i>	<i>a lot , i am proud of you <unk>. do you for standing up for highly and in bigotry-racism, programming, cut, granddaughters, unprecedented and excludes. thank you for standing up for us and i am proud of us!</i>	<i>as a hoosier, i'm praying for you sir. thanks for standing up for the constitution and get rid of obamacare, homophobie , cut, and actuality. thanks lawmaker for all you do for us, senator scott!</i>
negative → positive		
<i>crap fries, hard hamburger buns, burger tasted like crap! the people behind the counter were not friendly whatsoever. this place is bad news!</i>	<i>good selection, fresh food, like like like! the people who the staff were friendly. this place is great!</i>	<i>empathy, the best food, but it was very nice! the people here are really good. this place is amazing!</i>
positive → negative		
<i>the food is excellent and the service is exceptional! great as always, i love there food. i would recommend a visit here.</i>	<i>the food is the food and the service is terrible. horrible as, i really don't eat here. i would not recommend a dinner here.</i>	<i>the food is horrible and the service is terrible. really disappointed, i couldn't be back. i will not recommend this place.</i>

Table 7: Gender, Political slant and Sentiment style transfer examples. In addition to better preserving meaning, sentences generated by the BST model are generally grammatically better structured.