A Hyperparameter Analysis of η

To determine the similarity threshold η to establish the links between comments, we first calculate the sentence vector cosine similarity between each pairs of comments in a session. The similarity values are statistically analyzed, which are divided into four intervals as shown in Table 6. We then tune η in [0.5,0.9] with step 0.1, and the results are shown in 7. We can observe that 0.6 is the best setting.

Table 6: Distribution of similarities between comments

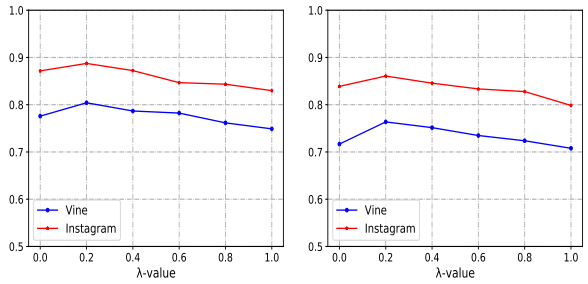
	[0,0.4]	[0.4,0.6]	[0.6,0.8]	[0.8,1]
Vine	0.035	0.3	0.185	0.48
Ins	0.099	0.375	0.164	0.362

Table 7: Influence of different thresholds on experimental results when establishing edges

Datasets	Metrics	0.5	0.6	0.7	0.8	0.9
Vine	Acc.	79.41	**80.41**	80	79.18	75.26
	F1.	75.67	**76.36**	75.59	74.2	70.62
Ins	Acc.	88.32	**88.74**	86.94	86.31	85.77
	F1.	85.05	**86.07**	84.37	83.06	82.8

B Hyperparameter Analysis of λ

We adjust the loss weight of the two tasks in Eq. 15 by setting different λ values from 0 to 1 with step 0.2. Five experiments are preformed on Vine and Ins, respectively. Fig. 5 shows the Accuracy scores and F1-macro scores with different λ values on two datasets. The results of vine are shown in blue lines, and the results of Ins are shown in red lines. $\lambda = 0.2$ achieves the best performance for both datasets.



(a) Accuracy (b) F1-macro

Figure 5: Loss weight analysis on two datasets