MIDAS: Mixing Ambiguous Data with Soft Labels for Dynamic Facial Expression Recognition
Supplementary Material

A. Further Evaluations and Ablations

A.1. Evaluation of alpha value

The α value in the beta distribution plays a pivotal role in the mixing strategy [1]. To evaluate the impact of various α values on MIDAS, we carried out an experiment with α values selected from $\{0.1, 0.2, 0.3, 0.4, 0.5\}$. The findings in Table 1 underscore that $\alpha = 0.4$ leads to enhanced performance in WAR, while $\alpha = 0.5$ enhances the UAR in MIDAS.

Table 1. Comparison of different α value

α	0.1	0.2	0.3	0.4	0.5
UAR	56.92	57.12	56.88	<u>57.45</u>	**58.06**
WAR	67.22	67.83	<u>68.77</u>	**69.16**	68.53

A.2. Evaluation with small datasets

MIDAS is designed to generate various kinds of vicinal data by expanding data distribution, thereby enabling models to learn DFER more efficiently. We investigated its ability to improve the performance of a model for DFER trained with fewer data.

To this end, we conducted an experiment with varying data set sizes. In this experiment, 10% and 20% of the full-size dataset were randomly sampled in a stratified manner, ensuring that the distribution of emotion classes in the sampled data remained similar to that in the original full-size data. The model was trained on the sampled dataset with different kinds of labels (MIDAS, MIDAS with hard labels, soft labels, and hard labels).

Table 2 shows the results of the experiment. MIDAS achieves a UAR of 35.02 and WAR of 45.21 on the 10% sampled data, and a UAR of 45.56 and WAR of 56.99 on the 20% data. These scores are better than those achieved by models trained with other labels, indicating that MIDAS enables models to learn DFER more efficiently even on smaller datasets.

Table 2. Evaluation with smaller datasets.

Label	10%		20%	
	UAR	WAR	UAR	WAR
Hard	30.66	38.38	41.18	50.84
Soft	30.42	39.51	42.04	53.55
MIDAS w/ hard label	32.26	40.86	43.12	53.90
MIDAS	**35.02**	**45.21**	**45.56**	**56.99**

References

[1] Hongyi Zhang, Moustapha Cisse, Yann N Dauphin, and David Lopez-Paz. mixup: Beyond empirical risk minimization. In *Proceedings of the International Conference on Learning Representations (ICLR)*, 2018. 1