Supplementary material for the article "Fuzzy Inference Attention Module for Unsupervised Domain Adaptation".

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S.I. Parameter Sensitivity Analysis of FIA

The FIA module is a dual-input, single-output system that incorporates expert prior knowledge. The input values are first fuzzified, which involves mapping the input values to fuzzy sets using membership functions. Then, fuzzy rules are applied to obtain the aggregated output. Finally, the aggregated output sets are defuzzified to obtain crisp output values. The parameters c, d, and k are utilized to regulate the membership functions and four defuzzification strategies are used to defuzzify the aggregated fuzzy sets. To evaluate the performance of FIA under various settings, experiments and comparisons are conducted between them.

Experiment results of DANN+f under different settings are shown in Table SI. The leftmost column lists the four most commonly used defuzzification methods, and the next column lists the three parameters in the FIA module: k, c, and d. All results in the table are averaged by group and four line charts are drawn based on the averaged values. The line charts are presented in Fig.S1, which includes four subfigures demonstrating the influence of the defuzzification strategies, k, c, and d, respectively.

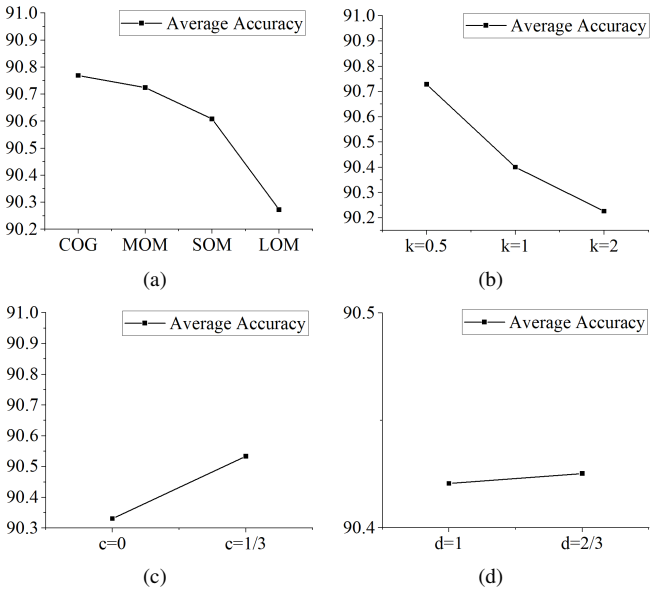

Fig. S1. Comparison of FIA's performance with different settings on Office31 dataset. The vertical axis in this graph represents the accuracy. The horizontal axis represents the average accuracy of FIA under different settings. (a) (b) (c) and (d) demonstrate the influence of the defuzzification strategies, k, c, and d, respectively.

TABLE SI
Performance (%) of FIA with different settings on Office31 dataset

defuzzy method	k	c	d	DANN +f (A→D)	DANN +f (A→W)	CDAN +f (A→D)	CDAN +f (A→W)	Avg
COG	1/2	0	1	86.7	89.4	95.0	93.8	91.2
COG	1/2	0	2/3	85.7	91.2	93.0	92.8	90.7
COG	1/2	1/3	1	85.1	90.1	93.0	93.0	90.3
COG	1/2	1/3	2/3	83.9	91.4	93.0	94.1	90.6
COG	1	0	1	85.1	94.1	94.8	89.3	90.8
COG	1	0	2/3	85.1	90.3	95	90.2	90.2
COG	1	1/3	1	85.5	90.1	93.2	91.9	90.2
COG	1	1/3	2/3	85.5	89.7	93.7	91.2	90.0
COG	2	0	1	85.5	90.8	94.0	93.0	90.8
COG	2	0	2/3	85.9	92.3	94.0	94.0	91.6
COG	2	1/3	1	84.7	91.7	95.2	92.8	91.1
COG	2	1/3	2/3	84.5	93.5	94.2	93.0	91.3
MOM	1/2	0	1	85.1	94.2	92.8	91.7	91.0
MOM	1/2	0	2/3	84.9	91.1	90.0	94.0	90.0
MOM	1/2	1/3	1	87.1	91.6	92.6	92.5	91.0
MOM	1/2	1/3	2/3	85.9	91.1	95.0	91.1	90.8
MOM	1	0	1	85.1	91.3	94.6	90.8	90.5
MOM	1	0	2/3	86.3	91.2	94.8	90.2	90.6
MOM	1	1/3	1	84.9	90.8	94.4	93.6	90.9
MOM	1	1/3	2/3	86.7	92.7	94.2	92.7	91.6
MOM	2	0	1	85.3	91.3	92.9	94.3	91.0
MOM	2	0	2/3	83.7	90.9	95.2	91.9	90.4
MOM	2	1/3	1	86.1	94.6	90.0	92.5	90.8
MOM	2	1/3	2/3	85.1	91.3	93.4	93.2	90.8
SOM	1/2	0	1	86.5	90.2	91.4	93.1	90.3
SOM	1/2	0	2/3	82.5	93.1	93.6	92.2	90.4
SOM	1/2	1/3	1	84.1	92.5	93.0	94.0	90.9
SOM	1/2	1/3	2/3	86.1	90.9	94.4	95.0	91.6
SOM	1	0	1	85.7	87.7	96.4	90.8	90.2
SOM	1	0	2/3	85.3	91.7	90.6	93.5	90.3
SOM	1	1/3	1	86.1	93.6	94.6	92.5	91.7
SOM	1	1/3	2/3	85.1	93.2	93.4	90.6	90.6
SOM	2	0	1	85.1	91.7	92.8	91.9	90.4
SOM	2	0	2/3	86.5	90.6	93.8	91.2	90.5
SOM	2	1/3	1	84.9	93.0	91.6	92.1	90.4
SOM	2	1/3	2/3	85.3	92.2	90.8	92.3	90.2
LOM	1/2	0	1	84.7	92.8	92.8	91.8	90.5
LOM	1/2	0	2/3	85.7	93.5	92.9	92.2	91.1
LOM	1/2	1/3	1	86.3	93.3	92.0	91.5	90.8
LOM	1/2	1/3	2/3	84.3	90.2	94.6	93.5	90.7
LOM	1	0	1	82.3	90.1	94.4	91.0	89.5
LOM	1	0	2/3	85.1	89.7	93.4	93.3	90.4
LOM	1	1/3	1	84.5	91.6	93.6	93.5	90.8
LOM	1	1/3	2/3	85.5	91.8	90.8	91.2	89.8
LOM	2	0	1	84.7	89.8	89.0	92.3	89.0
LOM	2	0	2/3	82.5	92.1	95.0	93.3	90.7
LOM	2	1/3	1	84.5	91.8	93.6	93.7	90.9
LOM	2	1/3	2/3	82.7	90.9	90.8	92.5	89.2