Supplementary Material for
Shot in the Dark: Few-Shot Learning with No Base-Class Labels

| method | backbone | *mini*ImageNet | |
		1-shot	5-shot
EPNet	ResNet-12	75.9±1.0	84.8±0.6
EPNet	ResNet-50	75.4±1.1	84.3±0.7
EPNet	ResNet-101	76.1±0.8	86.0±0.7
UBC-TFSL	ResNet-12	70.3±0.6	86.9±0.3
UBC-TFSL	ResNet-50	79.1±0.6	92.1±0.3
UBC-TFSL	ResNet-101	80.4±0.6	92.8±0.2

Table A1: **Comparison between our UBC-TFSL and TFSL using the same backbone network.** We compare UBC-TFSL and TFSL methods using the same backbone network. We report the mean of 1000 randomly generated test episodes as well as the 95% confidence intervals. The top results are highlighted in blue and the second-best results in green.

A1. Compare to TFSL using the same backbone network

To further make a fair comparison with TFSL methods, we implement EPNet[1] and use ResNet-12, ResNet-50, ResNet-101 as its backbone. All experiments setting are the same and we have 600 unlabeled images per novel class. As shown in Table A1, we report results on *mini*ImageNet.

A2. Results on Caltech-256 and miniImageNet&CUB

We report our results on Caltech-256 and miniImageNet&CUB in Table A2.

A3. Results for cross-domain FSL

We report our results for cross-domain FSL in Table A3 and Table A4. In Table A3, we show results of learning models on *mini*ImageNet and evaluating them on Caltech-256 and CUB. In Table A4, we show results of learning models on *tiered*ImageNet and evaluating them on Caltech-256 and CUB.

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[1]We use public code available at https://github.com/ElementAI/embedding-propagation.

setting	method	backbone	Caltech		*mini*ImageNet&CUB	
			1-shot	5-shot	1-shot	5-shot
	UBC-FSL (Ours)	ResNet-12*	48.7±0.6	68.9±0.6	36.0±0.5	54.3±0.5
	UBC-FSL (Ours)	ResNet-12	54.0±0.6	74.6±0.5	39.1±0.6	57.6±0.5
	UBC-FSL (Ours)	ResNet-50	49.6±0.7	69.0±0.5	39.4±0.6	57.7±0.5
	UBC-FSL (Ours)	ResNet-101	50.1±0.6	69.9±0.5	40.7±0.6	59.4±0.6
	FSL baseline	ResNet-12*	65.7±0.6	81.5±0.5	42.8±0.5	60.9±0.6
Non-transductive	FSL baseline	ResNet-12	64.1±0.6	80.5±0.6	42.6±0.6	60.6±0.5
	FSL baseline	ResNet-50	65.7±0.7	81.9±0.3	43.6±0.6	62.1±0.5
	FSL baseline	ResNet-101	66.4±0.6	82.5±0.4	43.9±0.6	62.4±0.6
	Combined (Ours)	ResNet-12*	65.4±0.6	82.7±0.5	42.9±0.5	61.7±0.7
	Combined (Ours)	ResNet-12	64.7±0.6	82.4±0.4	43.4±0.6	63.2±0.5
	Combined (Ours)	ResNet-50	65.6±0.6	82.8±0.4	44.1±0.6	64.4±0.5
	Combined (Ours)	ResNet-101	66.5±0.5	83.2±0.4	45.1±0.6	65.6±0.5
	UBC-TFSL (Ours)	ResNet-12*	56.4±0.6	74.8±0.6	39.7±0.4	58.9±0.5
Transductive	UBC-TFSL (Ours)	ResNet-12	60.7±0.7	80.0±0.5	44.9±0.6	65.0±0.6
	UBC-TFSL (Ours)	ResNet-50	61.8±0.6	81.4±0.5	59.1±0.8	76.2±0.6
	UBC-TFSL (Ours)	ResNet-101	61.4±0.6	80.3±0.5	59.0±0.8	75.5±0.6

Table A2: **Top-1 accuracies(%) on Caltech-256 and *mini*ImageNet&CUB.** We report the mean of 1000 randomly generated test episodes as well as the 95% confidence intervals. The top results are highlighted in blue and the second-best results in green.

method	backbone	*mini*ImageNet→Caltech		*mini*ImageNet→CUB	
		1-shot	5-shot	1-shot	5-shot
UBC-FSL (Ours)	ResNet-12	41.3±0.5	59.1±0.6	60.2±0.7	80.1±0.4
UBC-FSL (Ours)	ResNet-50	41.4±0.6	58.5±0.6	58.8±0.6	79.0±0.5
UBC-FSL (Ours)	ResNet-101	42.3±0.5	59.9±0.6	60.8±0.6	80.7±0.4
FSL baseline	ResNet-12	46.0±0.6	63.7±0.5	62.4±0.6	79.1±0.4
FSL baseline	ResNet-50	46.3±0.6	64.9±0.5	63.2±0.8	79.9±0.5
FSL baseline	ResNet-101	47.3±0.6	65.6±0.5	64.6±0.7	81.1±0.5
Combined (Ours)	ResNet-12	46.4±0.6	65.1±0.5	65.5±0.6	83.0±0.4
Combined (Ours)	ResNet-50	47.0±0.4	66.3±0.5	65.7±0.8	83.2±0.4
Combined (Ours)	ResNet-101	47.6±0.6	67.3±0.5	67.4±0.5	84.5±0.4
UBC-TFSL (Ours)	ResNet-12	41.5±0.5	59.2±0.6	61.1±0.6	81.1±0.5
UBC-TFSL (Ours)	ResNet-50	43.1±0.5	61.0±0.7	62.3±0.6	82.8±0.4
UBC-TFSL (Ours)	ResNet-101	44.0±0.6	61.7±0.6	63.0±0.6	83.3±0.4

Table A3: **Top-1 accuracies(%) for cross-domain FSL.** We report the mean of 1000 randomly generated test episodes as well as the 95% confidence intervals. The top results are highlighted in blue and the second-best results in green. Note that for here UBC-TFSL only have additional access to the unlabeled images of the novel classes on source domain.

method	backbone	*tiered*ImageNet→Caltech		*tiered*ImageNet→CUB	
		1-shot	5-shot	1-shot	5-shot
UBC-FSL (Ours)	ResNet-12	46.3±0.5	64.3±0.6	65.2±0.7	84.1±0.5
UBC-FSL (Ours)	ResNet-50	58.1±0.7	76.3±0.6	76.9±0.5	91.3±0.4
UBC-FSL (Ours)	ResNet-101	57.0±0.7	75.4±0.6	78.9±0.8	92.5±0.4
FSL baseline	ResNet-12	63.6±0.7	82.4±0.5	75.2±0.7	90.0±0.4
FSL baseline	ResNet-50	70.0±0.5	85.5±0.5	79.5±0.7	91.9±0.5
FSL baseline	ResNet-101	72.9±0.7	87.2±0.5	80.7±0.7	92.6±0.3
Combined (Ours)	ResNet-12	58.8 ±0.8	79.2±0.6	75.6±0.6	90.6±0.3
Combined (Ours)	ResNet-50	69.0±0.7	86.2±0.4	82.3±0.6	93.8±0.4
Combined (Ours)	ResNet-101	70.6±0.7	87.3±0.3	83.8±0.5	94.6±0.3
UBC-TFSL (Ours)	ResNet-12	44.8±0.6	62.7±0.7	66.0±0.7	84.6±0.7
UBC-TFSL (Ours)	ResNet-50	56.5±0.6	74.5±0.6	78.3±0.6	91.9±0.4
UBC-TFSL (Ours)	ResNet-101	59.4±0.7	76.3±0.7	81.1±0.7	93.3±0.5

Table A4: **Top-1 accuracies(%) for cross-domain FSL.** We report the mean of 1000 randomly generated test episodes as well as the 95% confidence intervals. The top results are highlighted in blue and the second-best results in green. Note that for here UBC-TFSL only have additional access to the unlabeled images of the novel classes on source domain.