

Supplementary material for Doodle It Yourself: Class Incremental Learning by Drawing a Few Sketches

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1 Evaluating with poor-quality sketches

For that, we further evaluated our Sketchy-trained model on 20 Quick-Draw (poor quality) classes without any further re-training. We obtain reasonable results without a major drop in accuracy (Table 1). We also separated the ‘hard’ sketches in the Sketchy dataset as those having high entropy [1], and separately experimented on those. Results show Acc@both/Acc@base/Acc@novel (5-shot) of 55.24%/69.43%/71.06% respectively, again not a significant drop compared with our final results.

Table 1: Experiment results on QuickDraw

	Acc@both	Acc@base	Acc@novel
5-Shot Learning	55.24%	69.43%	71.06%
1-Shot Learning	50.16%	69.12%	59.76%

2 Contribution of Gradient-Consensus

While Gradient Consensus (GC) is used for both first and second stages of training, we report the results only with respect to stage-2 in Table 2. In particular, GC improves the base class accuracy of the stage-1 model by 2.72%. We agree that the contribution of GC is minimal for stage-2, but removing GC from stage-1 would reduce all reported numbers of stage-2 due to conflicting gradient incurred by the large domain gap between sketch and photo. Precisely, our final results without the stage-1 gradient consensus will reduce Acc@both/Acc@base/Acc@novel (5-shot) to 57.21%/70.13%/71.12% respectively (by a factor of 3% – 4% decrements). This shows the impact of the GC on the overall framework.

*Interned with SketchX

3 Limitations and future work

In summary, our limitations are (i) Acc@both and Acc@novel lag behind the upper bound by 9 – 10%, signifying scope for further improvement (ii) lacking explicit training protocol for better cross-style generalisation across sketches.

References

- [1] Patsorn Sangkloy, Nathan Burnell, Cusuh Ham, and James Hays. The sketchy database: learning to retrieve badly drawn bunnies. *ACM TOG*, 2016. [1](#)