Supplementary
Einsum Networks: Fast and Scalable Learning of Tractable Probabilistic Circuits

Anonymous Authors

1. Inference Time Comparison
Section 4.1, in the main paper compared training time and memory consumption for EiNets, LibSPN (Pronobis et al., 2017) and SPFlow (Molina et al., 2019), showing that EiNets scale much more gracefully than its competitors. The same holds true for inference time. Fig. 1 shows the results corresponding to Fig. 3 in the main paper, but for inference time per sample rather than training time per epoch. Inference was done for a batch of 100 test samples for each model, i.e. the displayed inference time is 1/100 of the evaluation time for the whole batch. Again, we see significant speedups for EiNets, of up to three orders of magnitude (for maximal depth and EiNet vs. SPFlow).

References

1Anonymous Institution, Anonymous City, Anonymous Region, Anonymous Country. Correspondence to: Anonymous Author <anon.email@domain.com>.
Figure 1. Illustration of inference time and peak memory consumption of EiNets, SPFlow and LibSPN when training randomized binary PC trees, and varying hyper-parameters $K$ (number of densities per sum/leaf), depth $D$, and number of replica $R$, respectively. The blob size directly corresponds to the respective hyper-parameter under change. The total number of parameters ranged within $10k - 9.4M$ (for varying $K$), $100k - 5.2M$ (for varying $D$), and $24k - 973k$ (for varying $R$). For LibSPN, some settings exhausted GPU memory and are therefore missing.