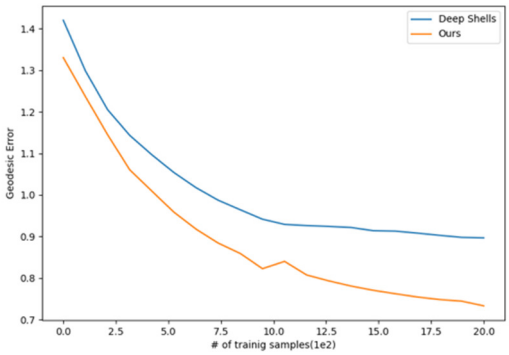

Fig. 6. A quantitative comparison of our method and Deep Shells, we train different number of samples and show average geodesic errors tested with same 900 testing scans

4.5. Limitation

Although our method is more efficient and solves symmetrical cases, like all other shape matching methods, self-touching is still a challenging problem. In addition, our method is highly dependent on the precision of landmark localizations, thus we need a much more reliable algorithm to automatically locate landmarks in order to train with synthetic shape datasets. Furthermore, obtaining landmarks from non-human scans are difficult. In this case, pure unsupervised methods are better options for interclass shape matching problems. The matching may improve with a more judicious choice of $\boldsymbol{\mu}$, or treatment of explicit constraints, which we leave for future work.

5. Conclusion

We propose a stable and simple method based on Deep Shells that solves symmetrical problems by optimizing problems with landmark constraints. Our method takes advantage of spectral convolution for feature extraction and learns more refined features that can distinguish self-similarities and use landmark supervision to constrain optimizations. We show that constraining landmark losses not only helps to disambiguate but also maintain similar quality of matching and with the same efficiency.

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