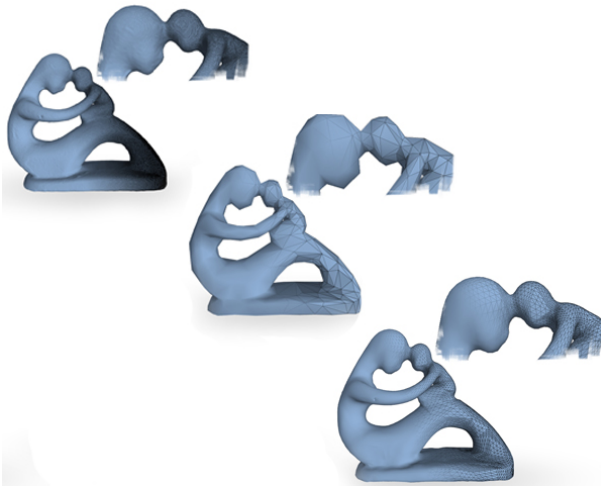


# Compact Models

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Development of approximation techniques for highly detailed surfaces is one of the challenges faced today. We introduce a new mesh structure that allows dense triangular meshes of arbitrary topology to be approximated. The structure is constructed from the information gathered during a simplification process. Each vertex of the simplified model collects a neighbourhood of input vertices. Then, each neighbourhood is fitted by a set of local surfaces taking into account the sharp features detected. The simplified model plus the parameters of these local surfaces, conveniently stored in a

file, is what we call *Compact Model (CM)*. The input model can be approximated from its *CM* by refining each triangle of the simplified model. The main feature of our approach is that each triangle is refined by blending the local surfaces at its vertices, which can be done independently of the others. Consequently, adaptive reconstructions are possible, local shape deformations can be incorporated and the whole approximation process can be completely parallelized.