Selected applications of subdivision surfaces and numerical quadratures for Gregory patches

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PROPOSITIONS

belonging to the thesis

SELECTED APPLICATIONS OF SUBDIVISION SURFACES AND NUMERICAL QUADRATURES FOR GREGORY PATCHES

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1. The concept of 3D modelling can be used in 2D vector graphics.

2. A ternary subdivision step applied to the original mesh before Catmull-Clark subdivision allows for the original control points to be interpolated.

3. Feature-adaptive subdivision for gradient meshes allows sparser and more efficient vector graphics designs.

4. Subdivision shading results in smoother normal fields which can be used to mitigate shading artefacts.

5. Sharp edges are not meant to look smooth, and thus are not expected to benefit from subdivision shading.

6. Semi-sharp edges are meant to become smooth, meaning that they are expected to benefit from subdivision shading.

7. Restricting the set of feasible solutions to symmetric quadratures can greatly speed up the optimisation process for quadrature finding for function spaces with symmetry.

8. "If science was perfect, it wouldn't be science." ––Marina Hurley