11 September 2001

Estimation algorithm and a multigrid convergence proof of that estimation

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To sum up the approach, the area measurement is based on the classical equation:

$$area(S) = \int n(s)ds$$

where $n(s)$ is the normal at a point s of a continuous surface S.

The discrete version of this integral is just the sum of the dot products between estimated normals n^* and basis vectors defining the surfels.

$n(s)$ is replaced by an estimation n^* on the discrete surface and ds by the area of the surfel.

This definition leads to a really simple algorithm and a proof of multigrid convergence exists. Actually, the convergence speed is up to the convergence speed of the estimated normals and thus basic normal estimators lead to a linear convergence of the area estimation.

Proof and algorithm are formulated in full length and detail, and will be submitted and discussed at the Dagstuhl meeting (11th TFCV) next April.