Data description

Columns used in Excel file

(Only relevant column names are described. There may be other columns, but they are not relevant for results.)

SourceType

- type of function (implicit vs explicit)

Source

- used function

Distorter

- normal vector estimation algorithm (NoDistorter = exact normals, NormalsUniform = AVG normals, NormalsMax = Max normals, other estimators are based on authors names)
- noise added to data (if used, contains word „Noise“ in the name of distorter)

Estimator

- used curvature estimator
- The results of the proposed solution highlighted with the red color are used in the paper. These are usually the best values, but not in all cases. We have used the highlithed values because of the consistency – same distribution, method etc.)

- The estimators from proposed solution are named with this pattern:
- r^3 (in a point, n: 4)
    - value estimated directly at a point
    - HRBF basis function r^3 (or can be exp(-epsilon * r^3))
- r^3 (Poisson: 26(610783965), FE: false, n: 4) –
    - value estimated with sampling from a neighborhood
    - HRBF basis function r^3 (or can be exp(-epsilon * r^3))
    - Poisson sampling with 26 points (or can be Uniform sampling, where points are uniformly and randomly distributed in unit disc)
    - FE = fast evaluation – if this is *true*, points are projected on a HRBF surface with binary partitioning. For *false*, used points are not exactly on the surface (see paper for explanation)
    - n = used k-ring (usually 2 o 4)
    - Number in brackets (610783965) is just for our internal purposes to identify used random number generator.
- Other estimators are named based on their authors and their parameters are based on their papers

AvgK1e, AvgK2e

- average MSE for K1 and K2

DevK1, DevK2

- standard deviation for K1 and K2

AVG

- total MSE (AvgK1e + AvgK2e)
- data are sorted based on this value, where available

AvgDP

- average dot product at all points (used in the normal vector re-estimation tests)

Sheets

explicit_poisson_test_size

Testing number of points within Poisson unit disc for explicit functions with respect to the resulting curvature quality. Contains graph that is used and explained in the paper (the graph data are joined with the sheed *implicit_poisson_test_size*)

implicit_poisson_test_size

Tests number of points within Poisson unit disc for implicit functions with respect to the resulting curvature quality.

explicit

Tests of curvature estimation for explicit data. Data and their tesselations are described in the paper.

implicit_non_exact

Tests of curvature estimation for implicit data tesselated with Classic Marching Cubes. Data and their tesselations are described in the paper.

implicit_exact

Tests of curvature estimation for implicit data tesselated with „exact“ Marching cubes. Data and their tesselations are described in the paper.

normals_test

Tests of the proposed solution with normal vectors re-estimation scheme. Explicit and implicit functions are together. Implicit functions use „exact“ Marching Cubes.

explicit_distorter

Test the curvature estimators quality for explicit data with a respect to the used normal vector estimator. The proposed solution normal vector re-estimation is tested against other algorithms.

implicit_non_exact_distorter

Test the curvature estimators quality for implicit data tesselated with Classic Marching Cubes with respect to the used normal vector estimation. The proposed solution normal vector re-estimation is tested against other algorithms.

implicit_exact_distorter

Test the curvature estimators quality for implicit data tesselated with „exact“ Marching Cubes with respect to the used normal vector estimation. The proposed solution normal vector re-estimation is tested against other algorithms.

explicit_noise

Tests curvature estimation for data with noise. Noise settings are described in the paper.

Implicit_exact_noise

Tests of curvature estimation for data with noise. Noise settings are described in the paper.

CGAL

Additional tests of CGAL. They are not included in the paper due to the poor quality of CGAL against other state-of-the-art solutions.

HRBF_Times

Timings of tests for different neighborhoods and basis functions