Chair for Computation in Engineering
Deparment of Civil, Geo and Environmental Engineering
Technical University of Munich

Efficient point inclusion testing based on kd-trees

Project Characteristics

Modeling:	★★☆☆☆
Mathematics:	★★★☆☆
Programming:	★★★★★
Science:	★★★☆☆

Task

Implement an efficient point inclusion test for geometric models defined by STL files. Therefore, you will:

- create an STL file reader,
- implement a point inclusion test that employs ray tracing,
- increase its efficiency by including kd-trees for spatial subdivision,
- test the implementation using exemplary STL files.
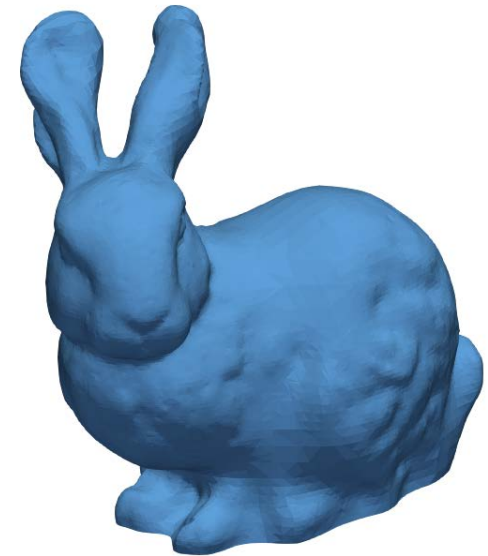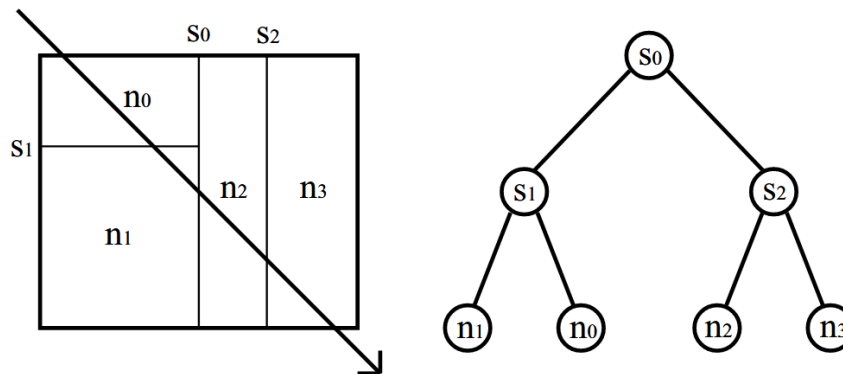
[1] T. Foley and J. Sugerman. KD-Tree Acceleration Structures for a GPU Raytracer
[2] https://de.wikipedia.org/wiki/Stanford_Bunny#/media/Datei:Stanford_Bunny.stl

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