Comenius University Bratislava
Faculty of Mathematics, Physics and Informatics

THESIS ASSIGNMENT

Name and Surname: Bc. Kristína Korecová
Study programme: Computer Graphics and Geometry (Single degree study, master II. deg., full time form)
Field of Study: Mathematics
Type of Thesis: Diploma Thesis
Language of Thesis: English
Secondary language: Slovak

Title: Triangulation of implicitly defined surfaces

Annotation: The student proposes an algorithm for triangulation of an implicitly defined surface. Given the singularities of the surface, one start to triangulate from the singular points. The regular parts should be triangulated adaptively and uniformly. Final surface can be further optimized. The student should provide a way of numerical computation of singular points at least in case of algebraic surfaces of low degree.

Aim: Provide a triangulation of a surface given as a zero set of a function. Compare the results with known approaches in terms of quality and computational algorithm.

Literature: B. R. de Araújo, Daniel S. Lopes, Pauline Jepp, Joaquim A. Jorge, and Brian Wyvill. 2015. A Survey on Implicit Surface Polygonization. ACM Comput. Surv. 47, 4, Article 60 (July 2015), 39 pages. DOI:https://doi.org/10.1145/2732197

E. Hartmann: A marching method for the triangulation of surfaces, The Visual Computer (1998), 14, pp. 95–108

S. Akkouche & E Galin: Adaptive Implicit Surface Polygonization Using Marching Triangles, Computer Graphics Forum (2001), Vol. 20, pp. 67–80

Keywords: implicitly defined surface, triangulation, computational approach

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Electronic version available:
prípustná pre vlastnú VŠ

Assigned: 19.10.2021

Approved: 20.10.2021 prof. RNDr. Július Korbaš, CSc.
Guarantor of Study Programme

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Student Supervisor