



## 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. Akkouché & 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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**Head of department:** doc. RNDr. Pavel Chalmovianský, PhD.

**Electronic version available:** prípustná pre vlastnú VŠ

**Assigned:** 19.10.2021

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prof. RNDr. Július Korbaš, CSc.  
Guarantor of Study Programme



Comenius University Bratislava  
Faculty of Mathematics, Physics and Informatics

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Student

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Supervisor