

ED STIC - Proposition de Sujets de Thèse
pour la campagne d'Allocation de thèses 2011

Titre du sujet :

Mention de thèse :

HDR Directeur de thèse inscrit à l'ED STIC :

Co-encadrant de thèse éventuel :

Nom :

Prénom :

Email :

Téléphone :

Email de contact pour ce sujet :

Laboratoire d'accueil :

Description du sujet :

Geometric problems are central in many areas of science and engineering. Computational geometry, the study of combinatorial and algorithmic problems in a geometric setting, and in particular triangulations have tremendous practical applications in areas such as computer graphics, computer vision and imaging, scientific visualization, geographic information systems, astronomy, computational biology... Traditionally, the complexity of computational geometry algorithms is studied in the worst case setting. This kind of analysis is often quite pessimistic compared to real life data.

Due to the emergence of standardized software libraries, in particular the Computational Geometry Algorithms Library CGAL,

developed in the framework of an Open Source Project, the so-far mostly theoretical results developed in computational geometry are being used and extended for practical use like never before. CGAL has been proposing efficient and robust packages computing Delaunay triangulations in the 2D and 3D Euclidean spaces for years.

The goal of this research is to develop new probabilistic analysis for algorithms for convex hulls and triangulations. Such analysis should have consequences on the design of triangulation algorithms.

The candidate must have a good level in all the following aspects:

mathematical aspects : probability

computer science aspects: algorithm analysis, C++ (templates, etc)

URL : <http://www.inria.fr/sophia/members/Olivier.Devillers/sujet-these.pdf>

English version:

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