

Computational Geometry

Semester : Winter 2014/2015 [Other terms: [Winter 15/16](#) · [Winter 13/14](#) · [Winter 12/13](#)]

Module # : INF-ALG-18 , INF-ALG-18

Event # : INF-ALG-007, INF-ALG-008

Programmes : Diplom Informatik, Master Informatik, Diplom Wirtschaftsinformatik, Master Wirtschaftsinformatik

IBR Group(s) : ALG (Prof. Fekete)

Type : Vorlesung/Übung

Lecturer :



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Assistant :



Dr. Michael Hemmer
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Credits : 5

Hours : 2+1+1

Time & Place : Lecture: Tuesday, 09:45 - 11:15 , IZ 305

Tutorial: Wednesday, 16:45 - 18:15, bi-weekly, IZ 358

Dates for Tutorials: 5.11. - 19.11. - 03.12. - 07.01. - 14.01. - 28.01.

Small Tutorial: Wednesday, 9:45 - 11:15, IZ 358, tutor: Sebastian Morr.

Exam: Tuesday 03.02.2015, 08:00 - 11:00, IZ 160

Start : First Lecture: Tuesday, 28.10.2014

First small tutorial: Wednesday, 05.11.2014

Prerequisites : none

Language : English

Certificates : Homework assignments during the semester (=Studienleistung), an exam at the end.

Content : After the course, the participants know the basic models of geometric algorithms. They are able to identify algorithmic difficulties of geometric problems and are able to formulate adequate objectives. They can handle different solution techniques and are able to develop algorithmic methods for yet unknown problems. They survey the practical relevance of problems and solutions.

We will speak English in class. Students are encouraged (but not required) to use English in exercises and exams as well.

Topics:

1. Geometric Problems and Data Structures
2. The Art Gallery Problem
3. Polygon Triangulation
4. Triangulation of Point Sets
5. Convex Hulls
6. Voronoi Diagrams
7. Delaunay Triangulation

References :

- [Mark de Berg, Marc van Kreveld, Mark Overmars and Otfried Schwarzkopf: *Computational Geometry*:](#)

Algorithms and Applications, Second. Edition, pages 367, Springer-Verlag, 2000 ([deBerg2000](#), [BibTeX](#))

- Joseph O'Rourke: *Computational Geometry in C*, Second Edition, Cambridge University Press.
- Rolf Klein: *Algorithmische Geometrie*, pages 1-355, examen.press, 1997 ([Klein1997](#), [BibTeX](#))

Homework

- 28.10.2014 -- Sheet 0: [\[PDF\]](#)
- 04.11.2014 -- Sheet 1: [\[PDF\]](#)
- 18.11.2014 -- Sheet 2: [\[PDF\]](#)
- 02.12.2014 -- Sheet 3: [\[PDF\]](#)
- 21.12.2014 -- Sheet 4: [\[PDF\]](#)
- 13.01.2015 -- Sheet 5: [\[PDF\]](#)

General Information

- There is a [mailinglist](#). We will distribute the homework sets and other announcements via this list, so, please subscribe!