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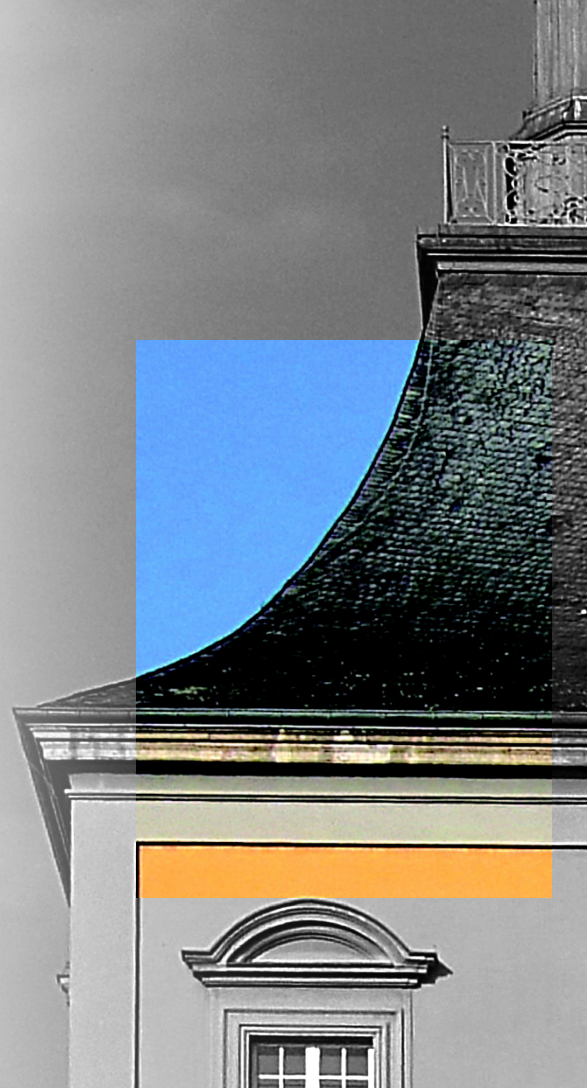
DISCRETE AND COMPUTATIONAL GEOMETRY

ANNE DRIEMEL
ELMAR LANGETEPE
ANURAG MURTY NAREDLA



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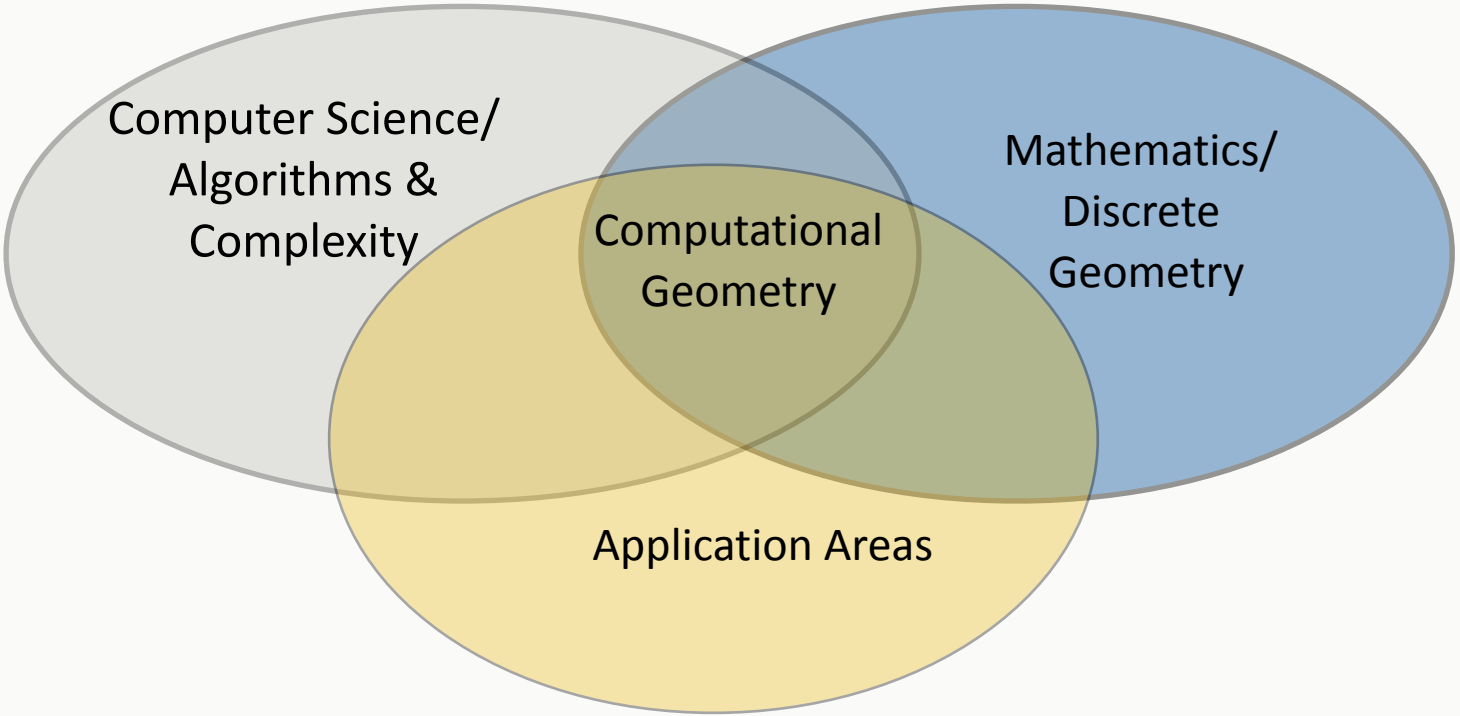
COMPUTATIONAL GEOMETRY



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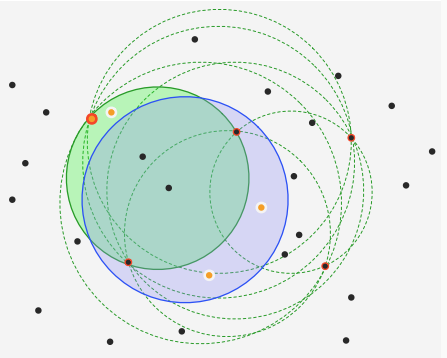
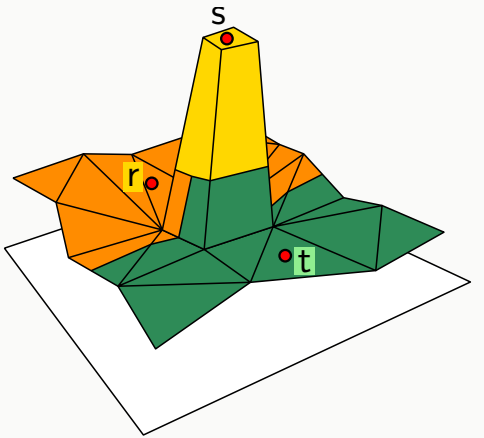
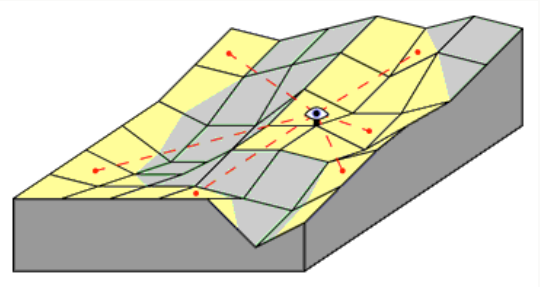
COMPUTATIONAL GEOMETRY

- Applications in many different areas:
  - Geographic Information Science
  - Computer Graphics
  - Robotics
  - Computer Aided Design
  - Virtual & Augmented Reality
  - Databases
  - Data Analysis
  - Visualisation







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TOPICS OF THIS COURSE

- Geometric concepts:
  - Convex hulls in the plane and higher dimensions
  - Voronoi diagrams, Nearest-neighbour searching
  - Arrangements of hyperplanes
  - Set systems and VC dimension
  - Metric embeddings
- Combinatorial complexity
- Algorithms and data structures

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LECTURES AND EXAMINATION

- Lectures by Anne Driemel and Elmar Langetepe
- Questions? -> write an email or approach us after the lecture
- Office hours: contact driemel@cs.uni-bonn.de or elmar.langetepe@uni-bonn.de to make an appointment, or drop by (rooms 2.060 and 2.068)
- Oral exams at the end of the semester
  - 1st Exam period: 28-29 January 2025
  - 2nd Exam period: 11-12 March 2025

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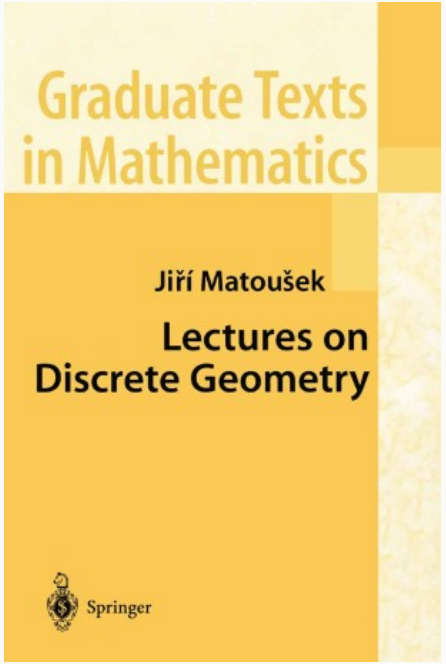
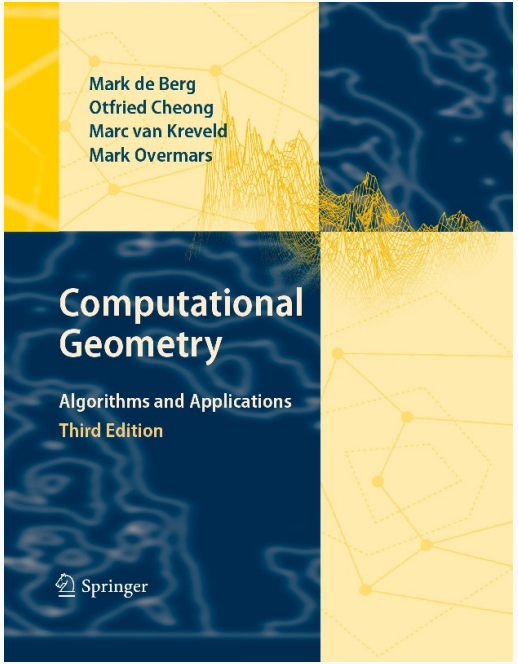
LITERATURE

- Jiri Matousek. *Lectures on Discrete Geometry.* (Springer)
- Mark de Berg, Otfried Cheong, Marc van Kreveld, Mark Overmars. *Computational Geometry— Algorithms and Applications.* (Springer)





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ASSIGNMENTS

- Weekly assignments posted on eCampus every Friday (starting 11 October)
- Submission of solutions via eCampus (deadline Friday the week after 23:59)
- Students may work in groups of up to two students
- At least 50 % of the points are needed to be admitted to the exam
- Tutorials (Anurag Murty Naredla) **starting 15 October**
  - Tuesdays 14:15 and 16:15 in room 2.050 of the computer science building
- Students are encouraged to present their own solutions
- Office hours: just drop by or contact us for an appointment

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QUESTIONS?