Ausgewählte Algorithmen der Computergraphik

Winter

(engl. Selected Algorithms in Computer Graphics)

Modulnummer: FIN-INF-120272

Kürzel	CP	Semester	Fachsem.	Dauer	Sprache	Niveau
AACG	6	Winter	ab 1.	1 Semester	deutsch	Master

Link zum LSF:	LSF
Zugang beschränkt:	
Verantwortung:	Christian Rössl
Dozent:in:	Christian Rössl
Lehrveranstaltungen:	• Vorlesung *Ausgewählte Algorithmen der Computergraphik* • Übung *Ausgewählte Algorithmen der Computergraphik*
Verwendbarkeit:	- M.Sc. INF: Informatik - M.Sc. INGINF: Informatik - M.Sc. WIF: Informatik - M.Sc. VC: Visual Computing

Angestrebte Lernergebnisse:
The students

- understand basic concepts of linear algebra and numerics
- apply these to implement algorithms from the field of computer graphics
- create their own implementations, tests and benchmarks
- are able to evaluate, select and use suitable tools (e.g. programming language, libraries)

- can understand and implement scientific articles in the field of computer graphics, especially with regard to mathematical content

Inhalt:

- Linear least-squares approximation
- Data interpolation and approximation
- Matrix factorization
- Sparse matrices
- Regularization
- Implementation issues
- General applications and case studies
- The specific contents may vary each semester.

The course can be held in English or German as required. Lecture materials are available in English.

Arbeitsaufwand:

- 56 h attendance
- 124 h independent work

Prüfungsvorleistungen:	Studien-/Prüfungsleistungen:	Lehrform / SWS:
In order to be able to take the exam, preliminary work is required. Details will be announced in the first lecture.	Oral examination 20 minutes	• Lecture 2 SWS • Exercise 2 SWS

Voraussetzungen nach Prüfungsordnung:	Empfohlene Voraussetzungen:

None	• Lectures in the field of computer graphics e.g.
	  ◦ Fundamentals of computer graphics
	  ◦ CAGD
	  ◦ Mesh Processing
	• Enjoy mathematical tasks and programming
	• Programming skills in C++ or Julia or Matlab and/or the willingness to learn new things quickly and independently
	• Basic knowledge of version management with Git
	• Willingness to follow the course in English as well

Medienformen:	**Literatur:**
	Literature will be announced in the lecture.

Hinweise:

We generally use Julia (https://julialang.org) as the programming language (instead of Matlab and GNU Octave) and C++ as required. Where exactly the focus lies will be determined during the course according to previous knowledge and wishes.

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