

MoSim – Modellierung und Simulation I

- Dozent: Jun.-Prof. Dr. Christian Mendl
- Zeit und Ort:
 - Mi. 14:50 – 16:20 Uhr (5. DS),
WIL C133 ungerade Kalenderwoche
 - WIL A222/P gerade Kalenderwoche (Übung)
 - Do. 14:50 – 16:20 Uhr (5. DS), WIL C133
- Inhalt:
 - Modellbildung und -analyse (Erhaltungsgleichungen, Einheiten und Dimensionen, ...)
 - Lattice-Boltzmann-Methode
 - Informationssuche im Web, Google's PageRank
 - Diskretisierung partieller Differentialgleichungen
 - Grundlagen künstlicher neuronaler Netze
- Prüfungszulassung: mindestens Hälfte der erreichbaren Hausaufgabenpunkte (Bearbeitung in Gruppen bis zu 3 Personen erlaubt)
- Verwendete Programmiersprache: Python
- Webpage zur Vorlesung:

https://tu-dresden.de/mn/math/wir/mendl/studium/courses/mosim_2018_wise

Modellierung und Simulation sind allgegenwärtig

- Architektur

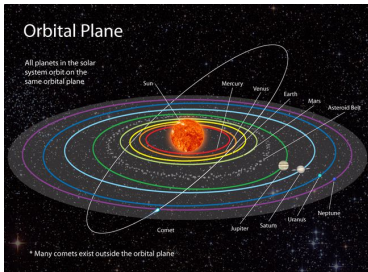


<http://craigcooper.us/architectural-designer.html>

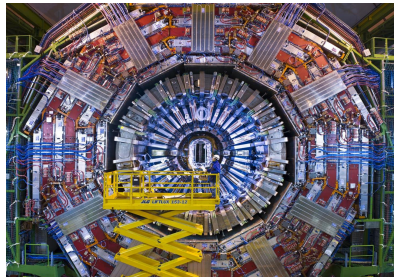


<https://www.autodesk.com/redshift/virtual-reality-in-architecture>

- Naturwissenschaft



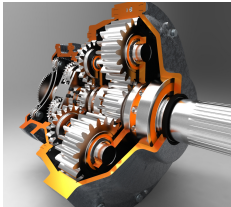
<https://www.nationalgeographic.org/topics/solar-system/>



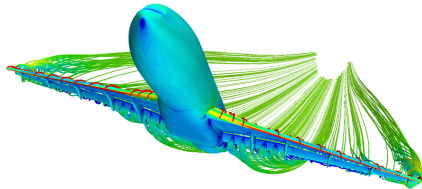
<https://home.cern/about/experiments/cms>

Modellierung und Simulation sind allgegenwärtig

- Produktdesign und -modellierung

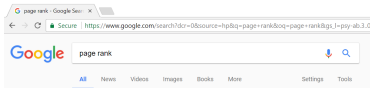


<https://grabcad.com/library/planetary-gearbox>



<https://verneglobal.com/blog/how-hpc-and-computational-fluid-dynamics-are-shaping-aviations-future>

- Informationstechnik



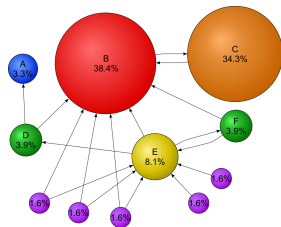
Page Ranking Tool - SEMrush Positionstracking-Tool - semrush.com

Prüfieren Sie von einer täglichen Ranking-Aktualisierung. Kostenlos testen!
>100 Millionen Domains >400 Millionen Keywords >100 Länderdatenbanken ->1 Million Benutzer
Dienstleistungen: SEO, SEM, PPC, SMM, Wettbewerbsintelligenz
Website-Checker Backlinks
Organische Recherche Keyword-Recherche

PageRank - Wikipedia

<https://en.wikipedia.org/wiki/PageRank>
PageRank (PR) is an algorithm used by Google Search to rank websites in their search engine results. PageRank was named after Larry Page, one of the founders of Google. PageRank is a way of measuring the importance of website pages.
Description · History · Algorithm · Variations

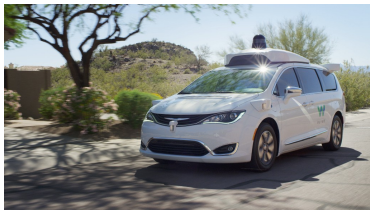
<https://www.google.com>



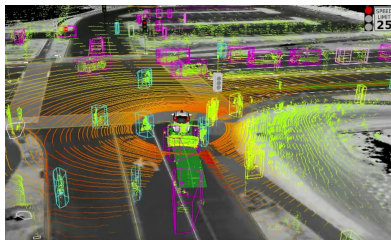
<https://en.wikipedia.org/wiki/PageRank>

Modellierung und Simulation sind allgegenwärtig

- Machine Learning



<http://money.cnn.com/2017/06/13/technology/future/waymo-google-car-retired/index.html>



<https://x.company/waymo>

Modellierung und Simulation sind allgegenwärtig

- Machine Learning



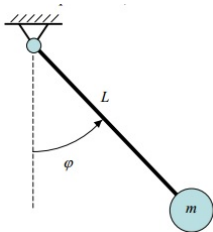
<http://money.cnn.com/2017/06/13/technology/future/waymo-google-car-retired/index.html>

<https://x.company/waymo>

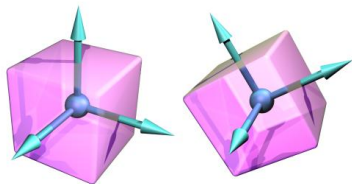


<https://twitter.com/dweekly/status/664936697621254145>

- Erhaltungssätze und Bilanzgleichungen

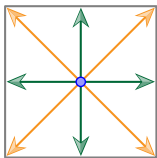


<http://community.wolfram.com>

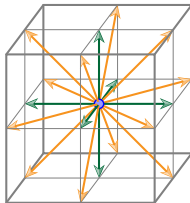


<http://www.ode.org>

- Lattice Boltzmann Methoden (LBM)

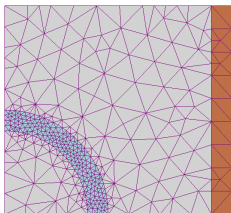


D2Q9 model

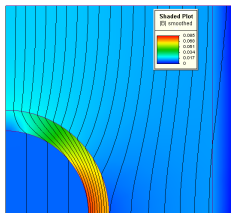


D3Q19 model

- Finite Elemente

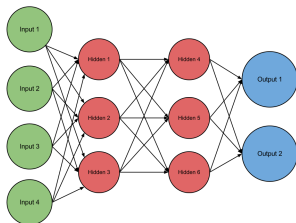


https://en.wikipedia.org/wiki/Finite_element_method



<https://commons.wikimedia.org/w/index.php?curid=2358762>

- Machine Learning und künstliche neuronale Netze



<https://commons.wikimedia.org/wiki/File:FeedForwardNN.png>