

MoSim – Modellierung und Simulation I

- Dozent: Jun.-Prof. Dr. Christian Mendl
- Zeit und Ort:
 - Di. 11:10 – 12:40 Uhr (3. DS),
WIL A120 ungerade Kalenderwoche
WIL B221/P gerade Kalenderwoche
 - Do. 14:50 – 16:20 Uhr (5. DS), WIL C133
- Inhalt:
 - Modellbildung (Erhaltungsgleichungen, ...)
 - Analyse (Parameter, Einheiten und Dimension, asymptotisches Verhalten, ...)
 - Simulationsmethoden und -werkzeuge (Differentialgleichungen, Lattice Boltzmann Methoden, Finite Elemente, Machine Learning (MoSim II))
- Prüfungszulassung: mindestens Hälfte der erreichbaren Hausaufgabenpunkte (Bearbeitung in Gruppen bis zu 3 Personen erlaubt; beinhaltet Testaufgaben)
- Verwendete Programmiersprache: Python 3.x
- Webpage zur Vorlesung:



https://tu-dresden.de/mn/math/wir/mendl/studium/courses/mosim_2017_wise

Modellierung und Simulation sind allgegenwärtig

- Architektur

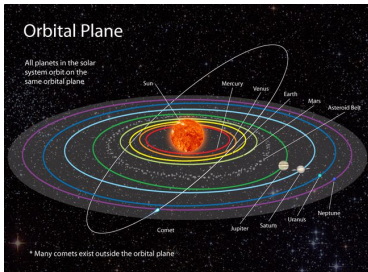


<http://craigcooper.us/architectural-designer.html>

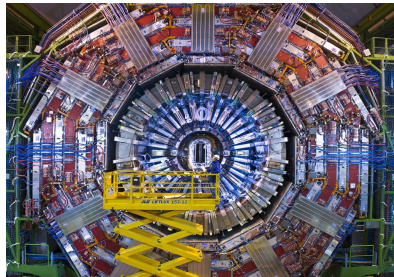


<https://www.autodesk.com/redshift/virtual-reality-in-architecture>

- Naturwissenschaft



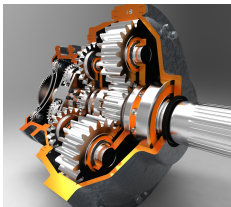
<https://www.nationalgeographic.org/topics/solar-system/>



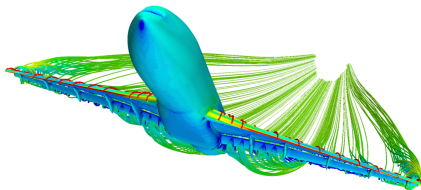
<https://home.cern/about/experiments/cms>

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- Produktdesign und -modellierung

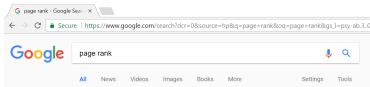


<https://grabcad.com/library/planetary-gearbox>



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

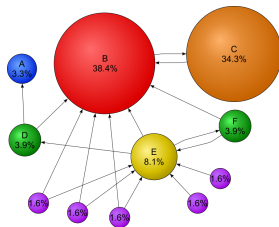
- Informationstechnik



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

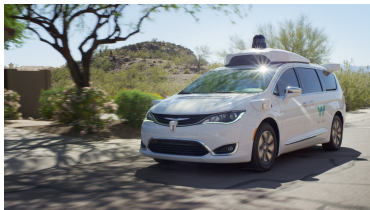
<https://www.google.com>



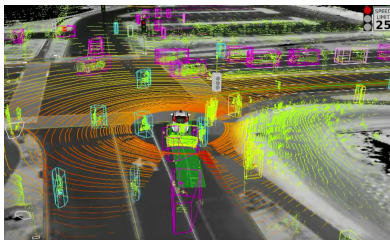
<https://en.wikipedia.org/wiki/PageRank>

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



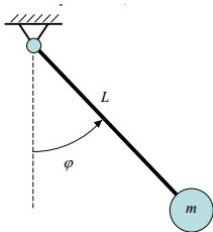
<http://money.cnn.com/2017/06/13/technology/future/waymo-google-car-retired/index.html>

<https://x.company/waymo>

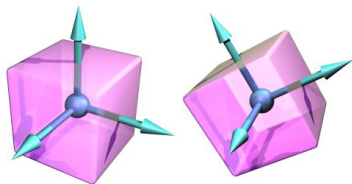


<https://twitter.com/dweekly/status/664936697621254145>

- Erhaltungssätze und Bilanzgleichungen

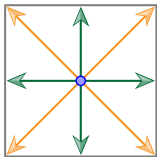


<http://community.wolfram.com>

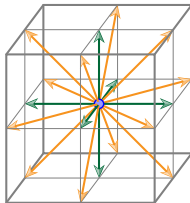


<http://www.ode.org>

- Lattice Boltzmann Methoden (LBM)

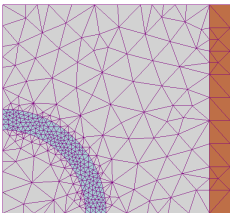


D2Q9 model

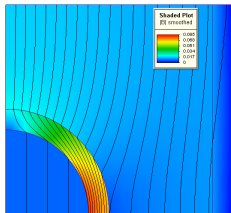


D3Q19 model

- Finite Elemente

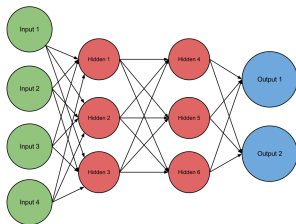


https://en.wikipedia.org/wiki/Finite_element_method



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

- Machine Learning (MoSim II)



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