Uncertainty Management and Sensitivity Analysis

Uncertainty is always there and LCA is no exception to that. The presence of uncertainties of different types and from numerous sources in LCA results is a fact, but managing them allows to quantify and improve the precision of a study and the robustness of its conclusions. LCA practice sometimes suffers from an imbalanced perception of uncertainties, justifying modelling choices and omissions. Identifying prevalent misconceptions around uncertainties in LCA is a central goal of this chapter, aiming to establish a positive approach focusing on the advantages of uncertainty management. The main objectives of this chapter are to learn how to deal with uncertainty in the context of LCA, how to quantify it, interpret and use it, and how to communicate it. The subject is approached more holistically than just focusing on relevant statistical methods or purely mathematical aspects. This chapter is neither a precise statistical method description, nor a philosophical essay about the concepts of uncertainty, knowledge and truth, although you will find a little bit of both. This chapter contains (1) an introduction of the essential terminology and concepts of relevance for LCA; (2) a discussion of main sources of uncertainty and how to quantify them; (3) a presentation of approaches to calculate uncertainty for the final results (propagation); (4) a discussion of how to use uncertainty information and how to take it into account in the interpretation of the results; and finally (5) a discussion of how to manage, communicate and present uncertainty information together with the LCA results.

An Introduction to Malware

These notes, intended for use in DTU course 02233 on Network Security, give a short introduction to the topic of malware. The most important types of malware are described, together with their basic principles of operation and dissemination, and defenses against malware are discussed.

Introduction to Statistics - eNotes

Online textbook used in the introductory statistics courses at DTU. It provides a basic introduction to applied statistics for engineers. The necessary elements from probability theory are introduced (stochastic variable, density and distribution function, mean and variance, etc.) and thereafter the most basic statistical analysis methods are presented: Confidence band, hypothesis testing, simulation, simple and multiple regression, ANOVA and analysis of contingency tables. Examples
Introduction to Medical Image Analysis

This book is a result of a collaboration between DTU Informatics at the Technical University of Denmark and the Laboratory of Computer Vision and Media Technology at Aalborg University. It is partly based on the book "Image and Video Processing", second edition by Thomas Moeslund. The aim of the book is to present the fascinating world of medical image analysis in an easy and interesting way. Compared to many standard books on image analysis, the approach we have chosen is less mathematical and more casual. Some of the key algorithms are exemplified in C-code. Please note that the code is neither optimal nor complete and merely serves as an additional input for comprehending the algorithms. It is no secret that this book is written by two authors. The keen reader will therefore note changes in style and language throughout the text.
Security of Dependable Systems

Security and dependability are crucial for designing trustworthy systems. The approach "security as an add-on" is not satisfactory, yet the integration of security in the development process is still an open problem. Especially, a common framework for specifying dependability and security is very much needed. There are many pressing challenges however; here, we address some of them. Firstly, security for dependable systems is a broad concept and traditional view of security, e.g., in terms of confidentiality, integrity and availability, does not suffice. Secondly, a clear definition of security in the dependability context is not agreed upon. Thirdly, security attacks cannot be modeled as a stochastic process, because the adversary’s strategy is often carefully planned. In this chapter, we explore these challenges and provide some directions toward their solutions.
Numerical Solution of Ordinary Differential Equations: Analysis and Applications

General information
State: Published
Organisations: Scientific Computing, Department of Informatics and Mathematical Modeling
Authors: Engsig-Karup, A. P. (Intern), Thomsen, P. G. (Intern)
Publication date: 2010

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Ordinary Differential Equations
Source: orbit
Source-ID: 262137
Publication: Education › Compendium/lecture notes – Annual report year: 2010

Pi har fødselsdag

General information
State: Published
Organisations: Geometry, Department of Mathematics
Authors: Hansen, V. L. (Intern)
Publication date: 2010

Publication information
Original language: Danish
Place of publication: København
Publisher: Danmarks Radio
Main Research Area: Technical/natural sciences
Links:
http://www.dr.dk/P1/Videnskabenkort/Udsendelser/20100323084627_1.htm

Bibliographical note
In series: Videnskaben Kort på DR, P1
Source: orbit
Source-ID: 271678
Publication: Education › Sound/Visual production (digital) – Annual report year: 2010

Rundt om uendeligheden: Danskernes Akademi, den 11. januar 2010

General information
State: Published
Organisations: Geometry, Department of Mathematics
Authors: Hansen, V. L. (Intern)
Publication date: 2010

Publication information
Original language: Danish
Place of publication: København
Brand!: Præsentation ved lancering af Matematiske Horisonter

General information
State: Published
Organisations: Department of Mathematics, Geometry
Authors: Markvorsen, S. (Intern)
Publication date: 2009

Publication information
Original language: Danish
Main Research Area: Technical/natural sciences
Electronic versions:
ForestFire02.pdf
Source: orbit
Source-ID: 248654
Publication: Education › Sound/Visual production (digital) – Annual report year: 2009

Brand!
Simplest elliptical models of forest fire growth are discussed and illustrated.

General information
State: Published
Organisations: Geometry, Department of Mathematics
Authors: Markvorsen, S. (Intern)
Number of pages: 288
Pages: 50-61
Publication date: 2009

Host publication information
Title of host publication: Matematiske Horisonter
Place of publication: Kgs. Lyngby
Publisher: Technical University of Denmark (DTU)
Edition: 1
ISBN (Print): 978-87-643-0453-4
Main Research Area: Technical/natural sciences
forest fire, Elliptic growth models
Links:
Source: orbit
Source-ID: 246388
Publication: Education › peer-review › Book chapter – Annual report year: 2009

Da de hemmelige koder blev offentlige

General information
State: Published
Organisations: Discrete mathematics, Department of Mathematics
Authors: Zenner, E. (Intern), Knudsen, L. R. (Intern)
Pages: 104-113
Publication date: 2009

Host publication information
Title of host publication: Matematiske horisonter
Fejrelættende koder

General information
State: Published
Organisations: Discrete mathematics, Department of Mathematics
Authors: Beelen, P. (Intern), Høholdt, T. (Intern)
Number of pages: 288
Pages: 163-173
Publication date: 2009

Host publication information
Title of host publication: Matematiske horisonter
Place of publication: Kgs. Lyngby
Publisher: Danmarks Tekniske Universitet (DTU)
ISBN (Print): 978-87-643-0453-4
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 258725
Publication: Education › Book chapter – Annual report year: 2009

Geometriske Operationer I Plan og Rum

General information
State: Published
Organisations: Geometry, Department of Mathematics
Authors: Markvorsen, S. (Intern)
Publication date: 2009

Publication information
Original language: Danish
Main Research Area: Technical/natural sciences
Electronic versions:
GeoAccum.pdf
Source: orbit
Source-ID: 258772
Publication: Education › Compendium/lecture notes – Annual report year: 2009

Hvorfor eliteuddannelse?

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling, Mathematical Statistics
Authors: Rootzen, H. (Intern), Lassen, J. K. (Intern), Landau, J. (Ekstern)
Publication date: 2009

Publication information
Original language: English
Publisher: DTU & Irisk.dk
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 257528
Publication: Education › Sound/Visual production (digital) – Annual report year: 2009

Kvinder og matematik - vil du være med?

General information
Matematiske horisonter

General information
State: Published
Organisations: Institute for Product Development, Scientific Computing, Department of Informatics and Mathematical Modeling, Geometry, Department of Mathematics
Number of pages: 288
Publication date: 2009

Publication information
Place of publication: Kgs. Lyngby, Denmark
Publisher: Technical University of Denmark (DTU)
ISBN (Print): 978-87-643-0453-4
Original language: Danish
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 246000
Publication: Education › Book chapter – Annual report year: 2009

Matematisk modellering af klima og energi

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Bacher, P. (Intern)
Pages: 234-245
Publication date: 2009

Host publication information
Title of host publication: Matematiske Horisonter
Place of publication: Kgs. Lyngby
Publisher: DTU Informatik og DTU Matematik
ISBN (Print): 978-87-643-0453-4
Main Research Area: Technical/natural sciences
Links:
http://www.imm.dtu.dk/Om_IMM/Informationsmateriale/MatematiskeHorisonter/Kapitel18.aspx
Source: orbit
Source-ID: 252939
Publication: Education - peer-review › Book chapter – Annual report year: 2009

Øl og Fladskærme - statistik i aktion

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Brockhoff, P. B. (Intern)
Pages: 174-187
Publication date: 2009

Host publication information
Title of host publication: Matematiske Horisonter
Place of publication: DTU Lyngby
The Spectral/hp-Finite Element Method for Partial Differential Equations

This set of lecture notes provides an elementary introduction to both the classical Finite Element Method (FEM) and the extended Spectral/hp-$\text{F}$-Finite Element Method for solving Partial Differential Equations (PDEs). Many problems in science and engineering can be formulated mathematically and involves one or more PDEs. The FEM is nowadays an important numerical discretization technique for approximately solving such mathematical equations on a computer. The set of lecture notes has been written for engineering students for use in the short three-week course \text{02623 The Finite Element Method for Partial Differential Equations} given at the Technical University of Denmark. The basic aim of the current lecture notes follows that of the earlier successful lecture notes for the course \cite{BarkerReffstrup1998}, which is to describe the FEM in a way that supports the reader in implementing the method independently. The original set of course notes has been modified and updated and additional chapters describing the high-order extensions to form the Spectral/hp-$\text{F}$-Finite Element Method have been included. Thus the significant contributions of Chapters 1, 2 and 5 covering the classical Finite Element Method are in large parts due to V. A. Barker and J. Reffstrup. With this set of lecture notes it should be possible for the reader to make a Spectral/hp-$\text{F}$-FEM toolbox in successive steps with the support given in the text. Emphasis is on the practical details supported with basic and sufficient theory to build the foundation in a three weeks period where the tools are developed and applied immediately. Furthermore, the aim of Spectral/hp-$\text{F}$-FEM toolbox is to provide a simple and generic framework for developing small prototype applications rather than directly approaching large-scale models. With this in mind, the goal is to let the reader encounter the typical problems involved in the practical implementation of these models and thereby gain a fundamental understanding of the algorithms and their practical implementation. For the practical work, a number of templates described using pseudo programming code, should be understood and converted by the reader to a programming language in a concrete implementation. A number of exercises is given which in a step-by-step manner guides the reader toward developing the necessary subroutines which can be used to solve typical and fairly general PDEs in one or two spatial dimensions. In the course the chosen programming environment is Matlab, however, this is by no means a necessary requirement. The mathematical level needed to grasp the details of this set of notes requires an elementary background in mathematical analysis and linear algebra. Each chapter is supplemented with hands-on exercises and the amount of material covered is intended to be balanced in such a way that each subject amounts to approximately one weeks work including producing a small report to document and communicate the work effort. This set of lecture notes is currently a working draft and may contain some (hopefully) minor errors. Any suggestions for improving the notes or feedback on errors and the content and its structure will be highly appreciated. Please report to the email apek@imm.dtu.dk. \today.

General information
State: Published
Organisations: Scientific Computing, Department of Informatics and Mathematical Modeling
Authors: Engsig-Karup, A. P. (Intern)
Publication date: 2009

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Spectral/hp-$\text{F}$-Finite Element Method
Source: orbit
Source-ID: 253758
Publication: Education › Compendium/lecture notes – Annual report year: 2009

Transition systems: Hvordan virker en colaautomatk?

General information
State: Published
Organisations: Language-Based Technology, Department of Informatics and Mathematical Modeling
Authors: Pilegaard, H. (Intern), Nanz, S. (Intern), Nielson, F. (Intern), Nielson, H. R. (Intern)
Pages: 63-79
Publication date: 2009

Host publication information
Title of host publication: Matematiske Horisonter
ISBN (Print): 9788764304534
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 257276
Wavelets - forbrydernes skræk

General information
State: Published
Organisations: Applied functional analysis, Department of Mathematics
Authors: Christensen, O. (Intern)
Number of pages: 288
Pages: 81-87
Publication date: 2009

Host publication information
Title of host publication: Matematiske horisonter
Publisher: Polyteknisk Boghandel og Forlag
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 253663
Publication: Education › Book chapter – Annual report year: 2009

Active Math Learning: Presentation at CDIO Regional Nordic meeting, DTU October 21. 2008
The presentation is concerned with general course planning philosophy and a specific case study (boomerang flight geometro-dynamics) for active learning of mathematics via computer assisted and hands-on unfolding of first principles - in this case the understanding of rotations and Eulers equations for the motion of rigid bodies under controlled torques.

General information
State: Published
Organisations: Geometry, Department of Mathematics
Authors: Markvorsen, S. (Intern)
Publication date: 2008

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Curriculum research
Electronic versions:
CDIOnordicDTU_08.zip
Source: orbit
Source-ID: 232490
Publication: Education › Sound/Visual production (digital) – Annual report year: 2008

An Introduction to Programming using MATLAB
Basic introduction to computing programming using MATLAB as first programming language.

General information
State: Published
Organisations: Scientific Computing, Department of Informatics and Mathematical Modeling
Authors: Rojas Larrazabal, M. D. L. C. (Intern), Dammann, B. (Intern)
Publication date: 2008

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 224223
Publication: Education › Compendium/lecture notes – Annual report year: 2008

Entrance to Advanced Mathematics: The metric foundations of modern analysis

General information
State: Published
Organisations: Geometry, Department of Mathematics
Authors: Hansen, V. L. (Intern)
Frames and bases: An Introductory Course

General information
State: Published
Organisations: Applied functional analysis, Department of Mathematics
Authors: Christensen, O. (Intern)
Number of pages: 313
Publication date: 2008

Publication information
Publisher: Birkhäuser Verlag
ISBN (Print): 978-0-8176-4677-6
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 207585
Publication: Education › Book – Annual report year: 2008

Introduction to Optimization and Data Fitting

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling, Scientific Computing
Authors: Madsen, K. (Intern), Nielsen, H. B. (Intern)
Publication date: 2008

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 224319
Publication: Education › Compendium/lecture notes – Annual report year: 2008

Linear Algebra for IT & Health

General information
State: Published
Organisations: Scientific Computing, Department of Informatics and Mathematical Modeling
Authors: Nielsen, H. B. (Intern)
Publication date: 2008

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 224242
Publication: Education › Compendium/lecture notes – Annual report year: 2008
An Introduction to Malware

These notes intended for use in DTU course 02233 on Network Security give a short introduction to the topic of malware. The most important types of malware are described, together with their basic principles of operation and dissemination, and defences against malware are discussed.

Design Rules and Electrical Parameters for a 90nm CMOS process

A set of fictitious simplified geometrical design rules and tables of electrical parameters are presented describing a 90nm CMOS process for educational purposes only.

Dynamics of Railway Vehicles and Rail/Wheel Contact

In these notes the fundamentals of the mechanics of rail/wheel contact and deterministic vehicle dynamics is explained. Chapter 1 describes the kinematics and dynamics of rail/wheel contact. Chapter 2 explains why vehicle dynamics must be treated as a nonlinear dynamic problem and how the model problem must be formulated. Chapters 3 and 4 deal with the theory of nonlinear parameter dependent dynamic systems in general, and chapter 5 yields the proof that the theory also applies to the high-dimensional vehicle dynamic problems. In chapter 6 the concept of non-smooth systems is introduced.
and some of the most important dynamic effects on vehicle dynamic problems are described. In chapter 7 characteristic features of railway vehicle dynamics are described, and in chapter 8 recommendations are presented for the numerical handling that is necessary for the investigation of vehicle dynamic problems. The notes end with a guide to vehicle system dynamics and 47 literature references.
How to keep warm by a campfire in a curved space

General information
State: Published
Organisations: Geometry, Department of Mathematics
Authors: Markvorsen, S. (Intern)
Publication date: 2007

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www.georgmohr.dk/vinderseminar.html#vins07
Source: orbit
Source-ID: 208959
Publication: Education › Sound/Visual production (digital) – Annual report year: 2007

Least Squares Adjustment: Linear and Nonlinear Weighted Regression Analysis

General information
State: Published
Organisations: Image Analysis and Computer Graphics, Department of Informatics and Mathematical Modeling
Authors: Nielsen, A. A. (Intern)
Publication date: 2007

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
imm2804.pdf
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2804
Source: orbit
Source-ID: 201124
Publication: Education › Compendium/lecture notes – Annual report year: 2007

License to Thrill

General information
State: Published
Organisations: Dynamical systems, Department of Mathematics, Geometry
Authors: Hjorth, P. G. (Intern), Markvorsen, S. (Intern)
Publication date: 2007

Host publication information
Title of host publication: XM : En inspirationsbog
Publisher: Matematiklærerforeningen
Main Research Area: Technical/natural sciences
**Studieretningsprojekter for gymnasiet**

**General information**
- State: Published
- Organisations: Department of Mathematics
- Authors: Bro, M. (Intern)
- Publication date: 2007

**Publication information**
- Original language: Danish
- Publisher: Danmarks Tekniske Universitet (DTU)
- Main Research Area: Technical/natural sciences
- Source: orbit
- Publication-ID: 208244
- Publication: Education › Sound/Visual production (digital) – Annual report year: 2007

**XM@DTU: License to Thrill**

**General information**
- State: Published
- Organisations: Geometry, Department of Mathematics, Dynamical systems
- Authors: Markvorsen, S. (Intern), Hjorth, P. G. (Intern)
- Number of pages: 123
- Publication date: 2007

**Host publication information**
- Title of host publication: Eksperimentel Matematik: En inspirationsbog til undervisning
- Place of publication: København
- Publisher: Matematiklærerforeningen
- Editors: Lyndrup, O., Michelsen, I., Pipenbring, D., Afzelius, N. M., Jørgensen, J. S., Christensen, M. B.
- ISBN (Print): 87-90-99627-5
- Main Research Area: Technical/natural sciences
- Source: orbit
- Publication-ID: 206824
- Publication: Education › Education - peer-review › Book chapter – Annual report year: 2007

**An Introduction to Generalized Linear Models.**

**General information**
- State: Published
- Organisations: Department of Informatics and Mathematical Modeling, Mathematical Statistics
- Authors: Thyregod, P. (Intern), Madsen, H. (Intern)
- Number of pages: 239
- Publication date: 2006

**Publication information**
- Place of publication: DTU
- Publisher: Informatics and Mathematical Modelling, Technical University of Denmark, DTU
- Original language: English
- Main Research Area: Technical/natural sciences
- Source: orbit
- Publication-ID: 224568
- Publication: Education › Book – Annual report year: 2006

**Computing the Alexander Polynomial Numerically**

Explains how to construct the Alexander Matrix and how this can be used to compute the Alexander polynomial numerically.
Correlation Functions and Power Spectra
The present lecture note is a supplement to the textbook Digital Signal Processing by J. Proakis and D.G. Manolakis used in the IMM/DTU course 02451 Digital Signal Processing and provides an extended discussion of correlation functions and power spectra. The definitions of correlation functions and spectra for discrete-time and continuous-time (analog) signals are pretty similar. Consequently, we confine the discussion mainly to real discrete-time signals. The Appendix contains detailed definitions and properties of correlation functions and spectra for analog as well as discrete-time signals. It is possible to define correlation functions and associated spectra for aperiodic, periodic and random signals although the interpretation is different. Moreover, we will discuss correlation functions when mixing these basic signal types. In addition, the note include several examples for the purpose of illustrating the discussed methods.

Introduction to SPIN
In this note we introduce the SPIN model checker for verification of concurrent programs.

ITRF, ETRS, EUREF89 og WGS84 - hvad er det nu lige det er?
This text is not available in English.
Self-Avoiding Walks (SAWs), Entanglement and Biomolecules
The Self-Avoiding Walk (SAW) on a lattice are often used to study properties of polymers in good solvents such as entanglement, knotting (ring polymers), and statistical mechanical properties of polymers. Recently it has been used to explain the increased probability of phage DNA being knotted when compared to DNA in found in unconstrained environments. We propose to examine different aspects of SAWs on the square (2D) and cubic (3D) lattice using a dynamical Monte Carlo (MC) method in known as the pivot algorithm. Initially we only consider linear (or open) polymers and look at the entangledness of a (lattice) polymer using the writhe of a curve. A first goal is to study the relationship between the writhe and extension of a polymer/SAW. Several questions arise naturally in the course of this project including (but not restricted to): the statistical quality of data obtained by MC sampling (autocorrelation times), how to implement geometrical (writhe) and topological (alexander polynomial) numerically, closing the curve we can start to ask questions about random (lattice) knots, optimizing the implementation e.g. using hash-coding ...

Tippetoppen

A Course in Error Correcting Codes
Classical Mechanics and Symplectic Integration

Integration i flere Variable

Noter (til 02701 Introduktion til Operationsanalyse)
Stochastic Control - External Models
This note is devoted to control of stochastic systems described in discrete time. We are concerned with external
descriptions or transfer function model, where we have a dynamic model for the input output relation only (i.e., no direct
internal information). The methods are based on LTI systems and quadratic costs. We will start with the basic minimal
variance problem and then move on to more complex and applicable strategies such as GMV, GPC and LQG control.
These methods can be regarded as extension to the basic minimal variance strategy and have all a close relation to
prediction. Consequently a section on that topic can be found in appendix.

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 2005

Test of Object-oriented Software

General information
State: Published
Organisations: Computer Science and Engineering, Department of Informatics and Mathematical Modeling
Authors: Haxthausen, A. E. (Intern)
Publication date: 2005

Ulineære Differentialligninger

General information
State: Published
Organisations: Department of Mathematics
Authors: Hjorth, P. G. (Intern)
Pages: 57-63
Publication date: 2005

Host publication information
Title of host publication: Differentialligninger of Uendelige Rækker
Publisher: Institut for Matematik, DTU
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 186290
Publication: Education › Book chapter – Annual report year: 2005
A Course in Error-Correcting Codes

General information
State: Published
Organisations: Coding, Department of Photonics Engineering, Department of Mathematics
Authors: Justesen, J. (Intern), Høholdt, T. (Intern)
Number of pages: 194
Publication date: 2004

Publication information
Publisher: European Mathematical Society Publishing House
Edition: first
ISBN (Print): 3-03719-001-9
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 182075
Publication: Education › Book – Annual report year: 2004

Approximation Theory: From Taylor polynomials to wavelets

General information
State: Published
Organisations: Applied functional analysis, Department of Mathematics
Authors: Christensen, O. (Intern), Christensen, K. L. (Intern)
Number of pages: 156
Publication date: 2004

Publication information
Place of publication: Boston
Publisher: Birkhäuser Verlag
Edition: 3rd
ISBN (Print): 978-0-8176-3600-5, 0-8176-3600-5
Original language: English
Series: Applied Numerical Harmonic Analysis
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 116722
Publication: Education › Book – Annual report year: 2004

Dynamic Optimization

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 2004

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
imm3283.pdf
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3283
Source: orbit
Source-ID: 201134
Publication: Education › Compendium/lecture notes – Annual report year: 2004

Geostatistik og analyse af spatielle data

General information
State: Published
Statistics in Finance

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling, Lund University
Authors: Madsen, H. (Intern), Nielsen, J. N. (Intern), Lindström, E. (Ekstern), Baadsgaard, M. (Intern), Holst, J. (Intern)
Number of pages: 300
Publication date: 2004

Publication information
Place of publication: Lund University
Publisher: Centre for Mathematical Sciences
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 224566
Publication: Education › Book – Annual report year: 2004

Test of Object-oriented Software

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Haxthausen, A. E. (Intern)
Publication date: 2004

Publication information
Original language: English
Main Research Area: Technical/natural sciences
testing, Java
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3551
Source: orbit
Source-ID: 201109
Publication: Education › Compendium/lecture notes – Annual report year: 2004

Unconstrained Optimization, 3rd edition

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Frandsen, P. E. (Ekstern), Jonasson, K. (Ekstern), Nielsen, H. B. (Intern), Tingleff, O. (Intern)
Publication date: 2004

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
imm3217.pdf
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3217
Source: orbit
Source-ID: 201104
Publication: Education › Compendium/lecture notes – Annual report year: 2004
Dealing with Problematic Situations

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 2003

Publication information
Original language: English
Main Research Area: Technical/natural sciences
strategy, problem solving, systems thinking
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3119
Source: orbit
Source-ID: 201145
Publication: Education › Compendium/lecture notes – Annual report year: 2003

Noter (til 02701 Introduktion til Operationsanalyse)

General information
State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 2003

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2991
Source: orbit
Source-ID: 201111
Publication: Education › Compendium/lecture notes – Annual report year: 2003

The Poor Man's Guide to Computer Networks and their Applications

General information
State: Published
Organisations: Computer Science and Engineering, Department of Informatics and Mathematical Modeling
Authors: Sharp, R. (Intern)
Publication date: 2003

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
imm3060.pdf
Links:
Source: orbit
Source-ID: 201142
Publication: Education › Compendium/lecture notes – Annual report year: 2003

Basic Concurrency Theory
In this set of notes, we present some of the basic theory underlying the discipline of programming with concurrent processes/threads. The notes are intended to supplement a standard textbook on concurrent programming.

General information
State: Published
Organisations: Computer Science and Engineering, Department of Informatics and Mathematical Modeling
Creativity and Problem Solving
This note gives an introduction to the themes related to creativity, methods and applications.

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 2002

Publication information
Original language: English
Main Research Area: Technical/natural sciences
methods, creativity, applications
Links:
http://www2.imm.dtu.dk/pubdb/p.php?1433
Source: orbit
Source-ID: 201146
Publication: Education › Compendium/lecture notes – Annual report year: 2002

Introduction to Interval Analysis

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Caprani, O. (Ekstern), Madsen, K. (Intern), Nielsen, H. B. (Intern)
Publication date: 2002

Publication information
Original language: English
Main Research Area: Technical/natural sciences
interval integration, roots of functions, global optimization, interval analysis
Electronic versions:
imm1462.pdf
Links:
http://www2.imm.dtu.dk/pubdb/p.php?1462
Source: orbit
Source-ID: 201102
Publication: Education › Compendium/lecture notes – Annual report year: 2002

Noter (til 02701 Introduktion til Operationsanalyse)

General information
State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 2002

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?265
Source: orbit
Supplementary Notes for Course 02611 Optimization and Data Fitting

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Madsen, K. (Intern), Nielsen, H. B. (Intern)
Publication date: 2002

Publication information
Original language: English
Main Research Area: Technical/natural sciences
use of Matlab, Huber estimation, orthogonal transformation, data fitting
Source: orbit
Source-ID: 201121
Publication: Education › Compendium/lecture notes – Annual report year: 2002

Noter (til 02701 Introduktion til Operationsanalyse)

General information
State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 2001

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?264
Source: orbit
Source-ID: 201113
Publication: Education › Compendium/lecture notes – Annual report year: 2001

A short introduction to image analysis - Matlab exercises
This document contain a short introduction to Image analysis. In addition small exercises has been prepared in order to support the theoretical understanding.

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Hansen, M. A. E. (Intern)
Publication date: 2000

Publication information
Original language: English
Main Research Area: Technical/natural sciences
matlab, image analysis, introduction
Electronic versions:
imm626.ps
Links:
http://www2.imm.dtu.dk/pubdb/p.php?626
Source: orbit
Source-ID: 201106
Publication: Education › Compendium/lecture notes – Annual report year: 2000

Grundlæggende matematik

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science
Algorithms for Linear Optimization - an Introduction

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Nielsen, H. B. (Intern)
Number of pages: 122
Publication date: 1999

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: imm654.ps
Links:
Source-ID: 170836
Publication: Education › Compendium/lecture notes – Annual report year: 1999

Introduction to Artificial Neural Networks

General information
State: Published
Organisations: Cognitive Systems, Department of Informatics and Mathematical Modeling
Authors: Larsen, J. (Intern)
Publication date: 1999

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions: imm2443.pdf
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2443
Source-ID: 201118
Publication: Education › Compendium/lecture notes – Annual report year: 1999

Methods for Non-Linear Least Squares Problems

General information
State: Published
Organisations: Scientific Computing, Department of Informatics and Mathematical Modeling
Authors: Madsen, K. (Intern), Nielsen, H. B. (Intern), Tingleff, O. (Ekstern)
Number of pages: 56
Publication date: 1999

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?660
Source: orbit
Noter (til 04030 Introduktion til Operationsanalyse)

General information
State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 1999

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?368
Source: orbit
Source-ID: 201114
Publication: Education › Compendium/lecture notes – Annual report year: 1999

Orthogonal Transformations: Lecture note

General information
State: Published
Organisations: Image Analysis and Computer Graphics, Department of Informatics and Mathematical Modeling
Authors: Nielsen, A. A. (Intern)
Number of pages: 8
Publication date: 1999

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
imm3088.pdf
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3088
Source: orbit
Source-ID: 201128
Publication: Education › Compendium/lecture notes – Annual report year: 1999

The strategic process in organisations - the contribution of soft approaches

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern), Sørensen, L. (Ekstern)
Publication date: 1999

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3844
Source: orbit
Source-ID: 201147
Publication: Education › Compendium/lecture notes – Annual report year: 1999

Unconstrained Optimization
This lecture note is intended for use in the course 04212 Optimization and Data Fitting at the Technical University of Denmark. It covers about 25% of the curriculum. Hopefully, the note may be useful also to interested persons not participating in that course. The aim of the note is to give an introduction to algorithms for unconstrained optimization. We present Conjugate Gradient, Damped Newton and Quasi Newton methods together with the relevant theoretical background. The reader is assumed to be familiar with algorithms for solving linear and nonlinear system of equations, at
a level corresponding to an introductory course in numerical analysis. The algorithms presented in the note appear in any good program library, and implementations can be found via GAMS (Guide to Available Mathematical Software) at the Internet address http://gams.nist.gov The examples in the note were computed in Matlab. The programs are available via http://www.imm.dtu.dk/hbn/software.html

**General information**

State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Frandsen, P. E. (Ekstern), Jonasson, K. (Ekstern), Nielsen, H. B. (Intern), Tingleff, O. (Intern)
Publication date: 1999

**Publication information**

Original language: English
Main Research Area: Technical/natural sciences
Links:

**Bibliographical note**

Available in ps or in pdf format.
Source: orbit
Source-ID: 201105
Publication: Education › Compendium/lecture notes – Annual report year: 1999

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**Cubic Splines**

**General information**

State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Nielsen, H. B. (Intern)
Number of pages: 80
Publication date: 1998

**Publication information**

Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
imm655.ps
Links:
http://www2.imm.dtu.dk/pubdb/p.php?655
Source: orbit
Source-ID: 170839
Publication: Education › Compendium/lecture notes – Annual report year: 1998

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**Noter (til 04030 Introduktion til Operationsanalyse)**

**General information**

State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 1998

**Publication information**

Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?369
Source: orbit
Source-ID: 201115
Publication: Education › Compendium/lecture notes – Annual report year: 1998

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**Statistics in Finance**

**General information**
Compilation of lecture notes for "Summer School on Asynchronous Circuit Design", DTU, August 18-22

Direct Methods for Sparse Matrices: An Introduction

Planlægning og OR
Stokastisk adaptiv regulering - Adaptive Systemer

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 1997

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2719
Source: orbit
Source-ID: 201138
Publication: Education › Compendium/lecture notes – Annual report year: 1997

Stokastisk adaptiv regulering - Appendix

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 1997

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2720
Source: orbit
Source-ID: 201139
Publication: Education › Compendium/lecture notes – Annual report year: 1997

Stokastisk adaptiv regulering - Basis

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 1997

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2716
Source: orbit
Source-ID: 201135
Publication: Education › Compendium/lecture notes – Annual report year: 1997

Stokastisk adaptiv regulering - Stokastiske Systemer, filtrering og regulering

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Stokastisk adaptiv regulering - System identifikation

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 1997

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2717
Source: orbit
Source-ID: 201136
Publication: Education › Compendium/lecture notes – Annual report year: 1997

Introduktion til MATLAB ved IMM's kurser

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Hansen, L. H. (Intern), Nielsen, H. B. (Intern)
Publication date: 1996

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Electronic versions:
imm658.ps
Links:
Source: orbit
Source-ID: 201107
Publication: Education › Compendium/lecture notes – Annual report year: 1996

Organisation-Planlægning-Strategi

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern), Olsen, T. B. (Ekstern), Sørensen, L. (Ekstern)
Publication date: 1996

Publication information
Original language: Danish
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3754
Source: orbit
Source-ID: 201149
Planlægning og OR

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1994

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 201150
Publication: Education › Compendium/lecture notes – Annual report year: 1996

Provably correct systems

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling, Department of Information Technology
Publication date: 1994

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links: http://www2.imm.dtu.dk/pubdb/p.php?1797
Source: orbit
Source-ID: 201100
Publication: Education › Compendium/lecture notes – Annual report year: 1994

Temporale forhold i synkrone integrerede kredsløb med 2-fase klok

General information
State: Published
Organisations: Computer Science and Engineering, Department of Informatics and Mathematical Modeling
Authors: Sparsø, J. (Intern)
Publication date: 1994

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 201144
Publication: Education › Compendium/lecture notes – Annual report year: 1994

A short introduction to Matlab

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 1993
LaTeX noter

General information
State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 1993

Numeriske Metoder for Sædvanlige Differential ligninger

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Nielsen, H. B. (Intern), Thomsen, P. G. (Intern)
Publication date: 1993

Numerisk Integration

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Busk, T. (Ekstern), Nielsen, H. B. (Ekstern)
Publication date: 1993

Planlægning og OR

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Introduktion til LaTeX på IMSOR

General information
State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 1992

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 202516
Publication: Education › Compendium/lecture notes – Annual report year: 1992

Practice problems (for 0403 Introduction to Operations Research)

General information
State: Published
Organisations: Operations Research, Department of Informatics and Mathematical Modeling
Authors: Juel, H. (Intern)
Publication date: 1992

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?370
Source: orbit
Source-ID: 201116
Publication: Education › Compendium/lecture notes – Annual report year: 1992

Introduktion til simulationssystemet (ACSL)

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Poulsen, N. K. (Intern)
Publication date: 1991

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?2768
Source: orbit
Source-ID: 201141
Publication: Education › Compendium/lecture notes – Annual report year: 1991

Øvelser i Statistisk Billedbehandling
Struktureret konstruktion af digitale ASIC's

Konstruktion af indlæsprogrammer

Statisk Optimering
Lagrange multiplicatorer - en introduktion

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1989

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3829
Source: orbit
Source-ID: 201153
Publication: Education › Compendium/lecture notes – Annual report year: 1989

Production scheduling in a steel mill

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1989

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3832
Source: orbit
Source-ID: 201154
Publication: Education › Compendium/lecture notes – Annual report year: 1989

Tidsrækkeanalyse: Time series analysis

General information
State: Published
Organisations: Mathematical Statistics, Department of Informatics and Mathematical Modeling
Authors: Madsen, H. (Intern)
Publication date: 1989

Publication information
Publisher: Informatics and Mathematical Modelling, Technical University of Denmark, DTU
Original language: Danish
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 224562
Publication: Education › Book – Annual report year: 1989

Opgaver og eksempler til "Notes on Static and Dynamic Optimization"

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern), Ravn, H. V. (Intern)
Publication date: 1986
Some inventory models

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1985

Notes on Static and Dynamic Optimization
This book pretends to be a unified presentation of the main theoretical and numerical results on optimization, and at the same time it provides an outlook to the many areas of application. It contains what I believe is the minimum knowledge required for a serious use of normative mathematical models. Most of the results presented here are available in the current literature although they are not well-known to most users of optimization methods. - what is different is the way they are presented: stepwise from general to particular results placing emphasis on the geometrical rather than the mathematical abstract approach.

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1981

En introduktion til offentlig planlægning

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern), Lyngvig, J. (Ekstern)
Publication date: 1979
Om tværfaglig undervisning i planlægning

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern), Lyngvig, J. (Ekstern)
Publication date: 1979

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3781
Source: orbit

Operationaanalyse - en kritik

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern), Lyngvig, J. (Ekstern)
Publication date: 1978

Publication information
Original language: Danish
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3802
Source: orbit

Rapporter fra et undervisnings experiment i planlægning

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1978

Publication information
Original language: Danish
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3780
Source: orbit

En introduktion til Everett's teori og dens anvendelser

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern), Ravn, H. V. (Intern)
Publication date: 1977

Publication information
A tutorial on planning

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1975

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3778
Source: orbit
Source-ID: 201163
Publication: Education › Compendium/lecture notes – Annual report year: 1975

Nonlinear Programming

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1974

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3776
Source: orbit
Source-ID: 201164
Publication: Education › Compendium/lecture notes – Annual report year: 1974

Principles of OR

General information
State: Published
Organisations: Department of Informatics and Mathematical Modeling
Authors: Vidal, R. V. V. (Intern)
Publication date: 1974

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www2.imm.dtu.dk/pubdb/p.php?3794
Source: orbit
Source-ID: 201165
Publication: Education › Compendium/lecture notes – Annual report year: 1974

Relaxation and Bender's partitioning algorithm

General information