Topic Selection For My Thesis

Moritz M. Konarski

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Contents

List of Interesting Publications

American Mathematical Society

Society for Industrial and Applied Mathematics

Journal on Numerical Analysis

Journal on Applied Mathematics

De Gruyter

++ Journal of Integrative Bioinformatics 1613-4516

++ Pure Mathematics and Applications 1788-800X

Open Computer Science 2299-1093

Jounal of Mathematical Crytpology 1862-2984

SAGE

Proceedings of the Institution of Mechanical Engineers, Part K: Journal of Multi-body Dynamics

The International Journal of High Performance Computing Applications

IOPScience

Inverse Problems

Journal of Physics A: Mathematical and Theoretical

Machine Learning: Science and Technology

Modelling and Simulation in Materials Science and Engineering

MSP

++ Analysis & PDE

++ Communications in Applied Mathematics and Computational Science

Royal Society

Open Science

Philosophical Transactions

Proceedings A

Interface

Taylor & Francis

International Journal of Computer Mathematics

Journal of Statistical Computation and Simulation

Mathematical and Computer Modelling of Dynamical Systems

Engineering Applications of Computational Fluid Mechanics

Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization

Journal of Discrete Mathematical Sciences and Cryptography

Cryptologia

Fuzzy Information and Engineering

Optimization Methods and Software

Areas of Interest

Navier-Stokes Equations

1. Numerical Solution of the Navier-Stokes Equations, A. J. Chorin, http://www.jstor.com/stable/2004575
   - numerical solutions to n-s equations
   - Bernard convection
   - incompressible flow
   - time-dependent
2. Instability Theory of the Navier-Stokes-Poisson Equations, J. Jang & I. Tice, https://dx.doi.org/10.2140/apde.2013.6.1121
   - Lane-Emden stationary gaseous star configurations
   - linear and non-linear dynamical instability results
   - Navier-Stokes-Poisson – hydrodynamical model of a star
3. Localization and Compactness properties of the Navier-Stokes global regularity problem, T. Tao, https://dx.doi.org/10.2140/apde.2013.6.25
   - global regularity problem
   - localized energy and entropy estimates of the Navier-Stokes equations
4. Embedded Boundary Method for the Navier-Stokes Equations on a time-dependent domain, G. H. Miller & D. Trebotich, COMM. APP. MATH. AND COMP. SCI. Vol. 7, No. 1, 2012
   - flow simulation of incompressible Navier-Stokes equations

Compression and Decompression Algorithms

1. Lossless Astronomical Image Compression and the Effects of Noise, W. D. Pence, R. Seaman, & R. L. White, https://www.jstor.org/stable/10.1086/599023
   - evaluation of lossless compression techniques
   - compression efficiency
   - noise in picture
   - average number of bits of noise for each pixel value
   - synthetic picture then analysed
2. Epsilon Entropy and Data Compression, E. C. Posner, E. R. Rodemich, http://www.jstor.com/stable/2240137
   - epsilon entropy – now much data is needed for good description to within ϵ
3. Vision and the Coding of Natural Images: brain secrets to image compression, B. A. Olshausen, D. J. Field, http://www.jstor.com/stable/27858027
   - using neuroscience to investigate how animals and nature encode and compress images
   - understand and then copy how humans recognize shapes and objects
4. Data Compression: Something for Nothing, J. MacCormick, http://www.jstor.com/stable/j.ctt7t71s.10
   - history and basics of compression algorithm
5. Data Compression, C. C. McGeoch, https://www.jstor.org/stable/2324310
   - short basics of computer science
6. Fast Sinc transform and image reconstruction from nonuniform samples in k-space, L. Greengard, J.-Y. Lee, & S. Inati, COMM. APP. MATH. AND COMP. SCI. Vol. 1, No. 1, 2006
   - sinc transform is a solution in image reconstruction, image processing, it's precise but slow
   - here is the fast sinc transform that performs convolution on data in $O(N \log N)$ for

N data points

Maxwell's Equations

1. Real-Space Green's Function Method for the numerical solution of Maxwell's Equations, B. Lo, V. Minden, & P. Colella, https://dx.doi.org/10.2140/camcos.2016.11.143
   - free-space Maxwell equations in 3D
   - Helmholtz decomposition
   - Duhamel's formula

Computer Science

1. Algorithm of traffic signs recognition based on the rapid transform, J. Gamec, D. Urdzik, & M. Gamcova, DOI: 10.2478/s13537-012-0019-3
   - 5 stage model to recognize traffic signs