NA Digest Saturday, September 11, 2004 Volume 04 : Issue 37

Today's Editor:
Cleve Moler
The MathWorks, Inc.
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Today's Topics:

Submissions for NA Digest:

Mail to na.digest@na-net.ornl.gov.

Information via e-mail about NA-NET: *Mail to na.help@na-net.ornl.gov.*

From: Daniel Potts <potts@math.uni-luebeck.de>
Date: Tue, 7 Sep 2004 15:12:47 +0200 (CEST)
Subject: NDFT, Nonequispaced Discrete Fourier Transform

We are pleased to announce version 2.0 of our C library for computing the nonequispaced discrete Fourier transform (NDFT) in one or more dimensions, of arbitrary input size.

Other common names for NFFT are nonuniform fast Fourier transform (NUFFT), generalized fast Fourier transform (GFFT), unequally spaced fast Fourier transform (USFFT), or gridding.

Our library is free software, and based on FFTW 3.x.

Visit the NFFT web-site at

http://www.math.uni-luebeck.de/potts/nfft

for the software, documentation, and related links.

Version 2.0 - features

- arbitrary-size transforms for one and more dimensions,
- iterative solution of the inverse transform,
- works on any platform with a C compiler and the FFTW package.

The fast transform implemented is based on the paper:
Fast Fourier transforms for nonequispaced data: A tutorial,
by D. Potts, G. Steidl, and M. Tasche.

The inverse transform is based on the paper:
Stability results for scattered data interpolation by trigonometric polynomials,
by S. Kunis and D. Potts.

The NFFT has a lot of applications, see e.g.

http://www.math.uni-luebeck.de/potts/nfft/links.sql

such as:
- summation at nonequispaced knots, evaluation of radial functions
- spherical Fourier algorithms
- Fourier reconstruction algorithms for (medical) imaging CT/MRI
- a new method for particle simulations

If you have comments, questions, or suggestions don't hesitate to email
Stefan Kunis (kunis@math.uni-luebeck.de) or
Daniel Potts (potts@math.uni-luebeck.de).

From: Peter Turner <pturner@clarkson.edu>
Date: Mon, 6 Sep 2004 11:02:57 -0400 (EDT)
Subject: Undergraduate Projects in CSE, Present at CSE05

Undergraduate Projects in
Computational Science and Engineering
SIAM CSE05, Orlando, Florida, February 12 - 15, 2005

As part of the activities at the SIAM Conference on Computational Science and Engineering 2005, http://www.siam.org/meetings/CSE05/index.htm it is again planned to have a session devoted to undergraduate research projects in Computational Science and Engineering.

This builds on successful sessions at SIAM Annual Meetings in Philadelphia, Montreal, and Portland. The hope is that event this will become a regular feature of SIAM's student activities at future CSE meetings.

SIAM has a fund available to help with students' costs in attending the meeting. Details are available at SIAM's web site: www.siam.org/prizes/travel.htm.

Interested students are invited to submit the following by e-mail in plain text format:

Title,

Name(s) of student(s), with affiliation
Name(s) of Advisor(s), with affiliation, and a
Brief abstract

to the organizers:

Peter Turner, pturner@clarkson.edu
Angela Shiflet, shifletab@wofford.edu
Kris Stewart, stewart@sciences.sdsu.edu

Deadline for submission: As soon as possible. Details must be finalized in October to be published in the program.

The number of presentation slots is limited, so early submission is advised.

From: Kirsten Wilden <wilden@siam.org>
Date: Fri, 10 Sep 2004 11:27:57 -0400
Subject: SIAM Conference on Control and Its Applications

Conference Name: Sixth SIAM Conference on Control and Its Applications, being held jointly with the 2005 SIAM Annual Meeting

Location: Hilton New Orleans Riverside Hotel, New Orleans, Louisiana

Dates: July 11-14, 2005

Invited Plenary Speaker:
Mrdjan Jankovic, Ford Research and Advanced Engineering
(Joint Plenary Speaker with the 2005 SIAM Annual Meeting)

Additional Invited Plenary Speakers will be listed on web site when available.

Invited Topical Speaker
Matthias Heinkenschloss, Rice University
(Joint Topical Speaker with the 2005 SIAM Annual Meeting)

The Call for Presentations for this conference is available at:
http://www.siam.org/meetings/ct05/

Deadlines

Minisymposium proposals: December 10, 2004

Abstracts for all contributed and minisymposium presentations: January 7, 2005

For additional information, contact SIAM Conference Department at meetings@siam.org.

From: Vasco Brattka <Vasco.Brattka@FernUni-Hagen.de>
Date: Tue, 07 Sep 2004 17:45:31 +0200
Subject: Conference in Germany on Real Numbers and Computers

First call for participation
6th CONFERENCE ON REAL NUMBERS AND COMPUTERS (RNC6)
November 15-17, 2004
Schloss Dagstuhl, Germany

Website: http://cca-net.de/rnc6/

Dates:
Registration deadline: October 24, 2004
Conference: November 15-17, 2004

Objective:

The aim of the symposia on "Real Numbers and Computers" is to bring together specialists from various research areas, all concerned with problems related to computations based on real numbers. These computations may use any number system implemented by a software package or in hardware, including floating and fixed point, serial, on line, continued fractions, exact, multiple precision, interval and stochastic arithmetic.

Results are sought on both applied and fundamental questions. Important topics discussed during these conferences include but are not limited to:

* Foundation and properties of number systems
* Computability and complexity
* Formal aspects and automatic proof checking
* Links with number theory and automata theory
* Basic arithmetic operations
* Implementation of the standard and special functions
* Engineering of floating and fixed point algorithms
* Symbolic manipulation of numbers
* Accuracy and reliability for applications and industry
* Robust geometric algorithms and exact geometric computation
* Hardware design support and implementations

The conference will feature invited lectures and contributed talks.

Invited Lectures:

1. Benno Fuchssteiner, Paderborn, Germany
2. Simon Plouffe, Montreal, Canada
3. Stefan Schirra, Magdeburg, Germany

Contributed Talks:

1. Generating formally certified bounds on values and round-off errors
Marc Daumas & Guillaume Melquiond

2. A proven correctly rounded logarithm in double-precision
de Dinechin, Loirat, Muller

3. On intermediate precision required for correctly-rounding
decimal-to-binary floating-point conversion
M. Hack

4. An extension of Chaitin's halting probability Ω to measurement
operator in infinite dimensional quantum system
K. Tadaki

5. Bridging the gap between formal specification and bit-level
floating-point arithmetic
S. Boldo

6. A fast algorithm for Julia sets of hyperbolic rational functions
Robert Rettinger

7. On the hierarchy of Δ_02-numbers
Xizhong Zheng

8. Automata, Borel functions and real numbers in Pisot basis
Cagnard, Simonnet

9. A comparison of real and complex pseudozero sets for polynomials with
real coefficients
Graillat, Langlois

10. Software division and square root using Goldschmidt's algorithm
Peter Markstein

11. A comparison of polynomial evaluation schemes
L. Fousse, S. Schmitt

12. The generic multiple-precision floating-point addition with exact
rounding (as in the MPFR library)
Vincent Lefevre

There will also be an informal session open to present work in progress.
Potential speakers might contact Christiane Frougny with an intended title
for such a presentation (Christiane.Frougny@liafa.jussieu.fr).

Steering Committee:

Jean-Claude Bajard, Montpellier, France
Jean-Marie Chesneaux, Paris, France
Marc Daumas, Lyon, France
Christiane Frougny, Paris, France
Peter Kornerup, Odense, Denmark (Chair)
Dominique Michelucci, Dijon, France
Jean-Michel Muller, Lyon, France

From: A Spence <as@maths.bath.ac.uk>
Date: Wed, 8 Sep 2004 14:03:00 +0100 (BST)
Subject: Bath/RAL Numerical Analysis Day

Bath/RAL NA Day - 1st October

The Department of Mathematical Sciences, University of Bath, and Rutherford Appleton Laboratory (RAL) are jointly hosting a Numerical Analysis Day on Friday 1st October at the University of Bath, UK.

Speakers are: Anne Greenbaum (Washington), Nick Trefethen (Oxford), Jennifer Scott and Mario Arioli (both RAL), Chris Budd and Alastair Spence (both Bath). Coffee available from 10.15am, with lectures starting at 10.50am

There is a small amount of space available for posters from PhD students. If any student is interested in presenting a poster at this meeting please contact Alastair Spence (as@maths.bath.ac.uk).

A draft timetable is available on:
http://www.maths.bath.ac.uk/~as/naday_1oct_04.html

All are welcome - there is no attendance fee. For further information contact Alastair Spence (email address above).

From: Peter Monk <monk@math.udel.edu>
Date: Tue, 7 Sep 2004 09:38:28 -0400
Subject: Faculty Position at The University of Delaware

Tenure Track Assistant Professor Position in Computational Applied Mathematics

The Department of Mathematical Sciences at the University of Delaware invites applications for a tenure-track appointment in Computational Applied Mathematics at the assistant professor level. The successful applicant must have a PhD, experience in high performance computing, and potential for excellence as a researcher and teacher. The Department of Mathematical Sciences has recently acquired a high-performance cluster and is especially interested in applicants who can contribute to its existing strengths in areas such as electromagnetism, fluid dynamics, numerical analysis, and modeling of mechanical, micro-scale, biological, and financial systems.

From: Guowei Wei <wei@math.msu.edu>
Date: Tue, 7 Sep 2004 09:48:14 -0400 (EDT)

Subject: Faculty Position at Michigan State University

Tenure Track Position in Mathematics
MICHIGAN STATE UNIVERSITY
Department of Mathematics
East Lansing, MI 48824-1027

Description: Pending budgetary approval, the Department will have a tenure track position to begin Fall 2005. It is expected that successful applicants will be appointed at the rank of Assistant Professor, but truly outstanding candidates for appointment at higher ranks will be considered. Excellence is essential in both research and teaching, and it is expected that the successful candidate will have at least two years of experience beyond the Ph.D. While outstanding applicants from all mathematical research areas may be considered, preference will be given to those with significant research accomplishments in interdisciplinary mathematics, especially in scientific computation as applied to nano-science, biological, optical/electromagnetic, or materials science.

Application information: An applicant should send a vita as well as a brief statement of research interests, and arrange for at least four letters of recommendation to be sent, one of which must specifically address the applicant's ability to teach. Application via website,
http://www.math.msu.edu/Hiring/current_ad.html,
is strongly encouraged. Application materials can also be addressed to The Hiring Committee, Department of Mathematics, Michigan State University, East Lansing, MI 48824-1027. Completed applications (including letters of recommendation) received by November 15, 2004 are assured of consideration, but applications will be considered until the positions are filled. Women and minorities are strongly encouraged to apply.

MSU is an Affirmative Action/Equal Opportunity Institution.

Handicappers have the right to request and receive reasonable accommodation.

From: Peter Coveney <P.V.Coveney@ucl.ac.uk>
Date: Thu, 9 Sep 2004 11:56:44 -0400 (EDT)
Subject: Postdoctoral Position at University College London

BBBSRC & EPSRC FUNDED POST-DOCTORAL RESEARCH FELLOWSHIPS
CENTRE FOR COMPUTATIONAL SCIENCE
University College London

High performance computing, visualisation and steering on grids

Applications are invited for several openings, suitable for theoretical and computational scientists, to work on a number of projects including:

(i) Mesoscale and multiscale modelling and simulation of condensed matter systems (including biological systems);

(ii) Development of robust environments for the deployment of the associated scientific codes on computational grids, including both workstation and high performance computing class applications.

The successful candidates will work at the Centre for Computational Science at UCL, which is exceptionally well resourced, with facilities that include several dedicated high performance compute and graphics machines, a Virtual Reality Centre, and state-of-the-art high-speed grid-based access to remote supercomputing facilities within the U.K., Europe and North America.

These positions are available to start at times on or after 1 November 2004, for periods between one to three years. Candidates should have, or be about to obtain, a Ph.D. degree in physics, mathematics, chemistry, computer science or engineering, including significant programming experience. Prior experience with scripting languages (e.g. Perl) would also be particularly useful for the posts associated with the projects described in (ii) above. Salary will be on the RA1A scale, including London Allowance, depending on age and experience.

Applications, including a full C.V. and the names and addresses of two academic referees, should be sent as soon as possible to Professor Peter Coveney, Director of the Centre for Computational Science, University College London, 20 Gordon Street London WC1H 0AJ U.K. (email: P.V.Coveney@ucl.ac.uk).

For further information see http://www.chem.ucl.ac.uk/ccs/ and www.realitygrid.org

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From: Ali Pinar <apinar_at_lbl_dot_gov>
Date: Thu, 09 Sep 2004 17:59:06 -0700
Subject: Postdoctoral Position at Lawrence Berkeley National Laboratory

Scientific Computing Postdoctoral Fellow

Requisition Number: 017473
Division: Computational Research Div
Department: HPC Research Department
Date Opened: 09/08/2004

KEY SKILLS: algorithm development, writing scientific codes, C, C++, Matlab, and Unix.

POSITION SUMMARY: Lawrence Berkeley National Laboratory has an opening for a visiting postdoctoral fellow in the Computational Research Division to work on the development of modeling and simulation methods for electric power systems.

DUTIES: Required -- The primary duty for this position is the development of combinatorial and numerical optimization methods and scalable algorithms for electric power systems. The position

will involve working on a multidisciplinary team that involves combinatorial algorithms and nonlinear optimization as well as electric power systems experts. The postdoctoral fellow will work with Ali Pinar, Chao Yang, and Juan Meza in the High Performance Computing Research Department. In addition, the position will involve collaborations with Bernard Lesieutre (EETD, LBNL).

QUALIFICATIONS: Required -- A Ph.D. in computer science, mathematics, electrical engineering, operations research, industrial engineering or a related field is required. Experience in optimization and writing scientific codes is highly desired. Programming experience in C or C++ is highly desired. Some experience in parallel programming is also desirable. In addition, good communication skills, both verbal and written, are required.

NOTES: This is a one-year term appointment with the possibility of renewal. Post-doctoral salaries depend on the number of years of experience and are competitive with market. Our division is closely affiliated with the National Energy Research Supercomputing Center at LBNL. The scientific computing group is a diverse group working on various aspects of scientific computing and computational sciences. More information about our research activities can be found at http://hprcrd.lbl.gov/research.

Please contact with Ali Pinar at apinar_at_lbl_dot_gov, if you are interested.

From: G. W. Roberts <mas039@bangor.ac.uk>
Date: Fri, 10 Sep 2004 19:41:07 +0100 (BST)
Subject: Postdoctoral Position at the University of Wales, Bangor

Postdoctoral position available in multiscale wavelet techniques.

The Department of Mathematics at the University of Wales, Bangor has a vacancy for up to 18 months (from 1st October, 2004 - or as soon as possible thereafter - until 31 March, 2006) at the postdoctoral level to work on multiscale wavelet techniques for the solution of partial differential equations and associated boundary integral problems. The researcher will be responsible for the software implementation of innovative algorithms in this area.

This is part of a European grant under the IHP scheme; under the EU mobility rules, applicants for this post should be EU nationals, but not UK nationals. The project home page is http://www.ann.jussieu.fr/IHP.

For further information and application forms see:

http://www.bangor.ac.uk/corporate/vacancies/home.php?jobdetails=1&reference=04-4/28&category2=Academic

For informal enquiries contact:

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Department of Mathematics,
School of Informatics,
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LL57 1UT.
Tel: +44 (0)1248 382480/382686
Email: g.w.roberts@bangor.ac.uk

From: Bill Ward <William.A.Ward.Jr@erdc.usace.army.mil>
Date: Fri, 10 Sep 2004 15:48:24 -0700
Subject: Staff Positions at U. S. Army Research Center in Vicksburg

Staff Positions at the U.S. Army ERDC MSRC

Computer Sciences Corporation invites applications for two open positions: a Visualization Scientist in the Scientific Visualization Center and a Computational Scientist in the Computational Science and Engineering (CS&E) Group at the U.S. Army Engineer Research and Development Center (ERDC) Major Shared Resource Center (MSRC) located in Vicksburg, Mississippi. U.S. citizenship and the ability to obtain and keep a security clearance is required for both positions.

The ERDC campus in Vicksburg constitutes the largest civil engineering research complex in the world and is the primary research facility for the U.S. Army Corps of Engineers. The ERDC MSRC is one of four Department of Defense high performance computing (HPC) centers; its current resources include two 512-CPU Compaq SCs, a 1904-CPU Cray T3E, a 64-MSP Cray X1, and three 512-CPU SGI Origin 3000s. These resources will be enhanced in 2005.

The primary duties of the Visualization Scientist are to provide cutting-edge scientific visualization services to local and remote DoD HPCMP clients. The Visualization Scientist maintains professional knowledge of latest visualization hardware and COTS software methodologies to aid the researcher in reducing their time to analyze the numerical data. The Visualization Scientist promotes the national recognition of Vicksburg's ERDC MSRC by fully supporting Challenge efforts with scientific visualizations for meaningful analysis. The Visualization Scientist identifies and publicizes success stories through papers from analysis mentioned above in peer-reviewed conferences and journals. The Visualization Scientist will be required to have knowledge of scientific visualization COTS programs (such as Ensight and VTK), graphics APIs (such as OpenGL), and experience in the UNIX operating system. Knowledge of conceptual animation (using such packages as 3D Studio Max, Maya, and Lightwave) is desirable though not required. A bachelor's degree in a relevant field (engineering, computer science, etc.) is required. In addition the position requires seven years of general experience in the IT field, and three years of specialized experience. Advanced degrees can be used as a substitute for these years of experience requirements. Interest

in this position should be communicated to the Paul Adams at 601.634.4616 or Paul.Adams@erdc.usace.army.mil.

The Computational Scientist will work in one or more of the following areas: (i) performance evaluation of current HPC systems; (ii) migration and tuning of codes for newly installed HPC systems; (iii) implementation of parallelism in engineering and scientific applications; (iv) evaluation and modeling of future HPC system architectures and schedulers. The successful applicant must have the ability to communicate effectively and work in a team environment. Experience in programming parallel and vector systems using Fortran, C, MPI, OpenMP, and Pthreads is highly desirable. A Ph.D. in a relevant computational field (e.g., applied mathematics, computer science, engineering, computational fluid dynamics, computational structural mechanics, physics) is preferred, but not required. Position and salary will be commensurate with experience. Interest in this position should be communicated to Dr. Bill Ward at (601) 634-2512 or William.A.Ward.Jr@erdc.usace.army.mil.

From: Thomas Hogan <hogan@math.ohio-state.edu>
Date: Tue, 7 Sep 2004 12:40:04 -0400 (EDT)
Subject: Contents, Journal of Approximation Theory

Table of Contents: J. Approx. Theory, Volume 129, Number 2, August 2004

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From: George Anastassiou <ganastss@memphis.edu>
Date: Wed, 08 Sep 2004 20:39:40 -0700
Subject: Contents, Journal of Concrete and Applicable Mathematics

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End of NA Digest

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