



Anne C. Elster

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<http://www.idi.ntnu.no/~elster> <http://research.idi.ntnu.no/hpc-lab>

Research Objectives and Interests

My current research interests are in parallel computing software environments and applications. My current research focuses on developing good models and tools for heterogeneous computing software environments, including developing and parallel scientific codes that interact visually with the users by taking advantage of the powers in modern GPUs, clusters and Grids. Current research also includes adapting larger scientific codes for these novel heterogeneous architectures. Other topics of interest include performance analysis and benchmarking of HPC platforms, auto-tunable algorithms, computational steering, as well as FFTS and fast linear bit-reversal algorithms.

- **IDI/NTNU HPC-Lab, founder and leader.** Currently supervising: 7 PhD students (3 as co-supervisor) and 7 Master students, hosting several visitors, both other NTNU graduate students and international researchers. **Currently ca. 50 graduate student alumni**, several received prizes for their thesis work, 2+ PhD students completed with me as main advisor + have served on many review committees..
- **Research collaborations with:** ARM, CERN (Summer jobs and MS theses opportunities), GE Healthcare, Schlumberger, Statoil, & colleagues from several other NTNU Departments.
- **Funding sources:** NFR, NOTUR, NTNU, NVIDIA (Elster is PI of NTNU s CUDA Reseach & Teaching Centers), Statoil, Schlumberger and others. It is very satisfying seeing our collaborations and work impacting other fields.

Ph.D. Cornell University (1994) Electrical Engineering (Minor: Computer Science)

Thesis Title: "Parallelization Issues and Particle-in-Cell Codes."

Advisor: Prof. Niels F. Otani. Committee : Profs. Keshav Pingali (CS) & Soo-Young Lee (EE)

M.S. Cornell University (1988) Electrical Engineering

Thesis Title: "Efficient Parallel Algorithms for Matrix Operations." Advisor: Prof. A. P. Reeves.

B.S. University of Massachusetts (1985) Computer Systems Engineering (*cum laude*).

Also enrolled in their Honors Math program

Business Studies, University of Oregon , 1981-1982

Course on Board Competency (Styrekomp. I), Norw. Business College (BI-Trondheim), 2007

Academic Experience

2001-present: Associate Professor , Dept. of Computer and Information Science (IDI), NTNU

2003-2006 and 2012-present:

Co-Founder and Co-Director **Computational Science & Visualization Program**, NTNU

2012-present Director of CSE "Lighthouse" to be part of the

Computational Science & Engineering Center under establishment at NTNU

Academic Experience continued:

2011-present and

2010/2011 (sabbatical):

Visiting Scientist, Dept. of Electrical & Comp. Engin. Univ. of Texas at Austin , USA.
incl. main PI on project establishing The CUDA Teaching Center at UT Austin
Also Spring 2002 (80% leave from NTNU) , Summer 2003, Fall 2005 (sabbatical),
And Summers 2006-2009

2009-2010: Section Head, Complex Systems, Dept of Comp. and Information Science (IDI), Norwegian University of Science and Technology (NTNU) , Trondheim,
Section included 12+ faculty members incl.the Computer Architecture and Design & Algorithms, HPC and Visualization groups.

2000 (Summer & fall): Adjunct faculty member ECE Dept. at Univ. of Texas at Austin , USA.
EE 360P -- Operating Systems (Fall 2000) &
EE 360C -- Data Structures in C++ (CS7) (Su 2000)

1997-1999 Research Associate/Lecturer -- University of Texas at Austin,
Center for Numerical Analysis/ Texas Institute for Computational and Applied Mathematics (now ACES)
CS 328, a second level data structures course in C++ (su 1997) and
EE360 Advanced Data Types (Su'98)
CS/M 393N -- Numerical Solutions to Elliptic Partial Differential Equations
(Spring 1999) -- a second level grad course on iterative PDE methods (lectured for Dr. David M. Young)
Co-Organized conference: IMACS 1998

1992- 1994 Research Assistant, Cornell University
Thesis work with Prof. Niels Otani, Dr. John G. Shaw (Xerox), and
Dr. Palghat S. Ramesh (Xerox)

1989-1990 Research Assistant, Cornell University worked on parallel numerical linear algebra sponsored by the Mathematical Science Institute, Cornell University,

1988-1989 Research Assistant, Cornell University, Joint work with Dr. Hungwen Li (IBM) on parallel algorithms connected with IBM Yorktown's Polymorphic Torus Project,

1986-88, 1990-91 Cornell University - Teaching Assistant

- School of Electrical Engineering: Introductory digital systems course (1987-88).
- Dept. of Computer Science:
 - Junior-level assembly lang. programming course on the MC68000 (1986, 1990),
 - Senior-level numerical analysis course (1991), Introductory programming course in PASCAL (1991).

Professional Experience:

1999-present President of my own company, Acenor Inc

which focuses on industrial computing training and consulting, but have mostly put its activities on hold while starting up my new career in Norway.

- Developed training course: "Fundamentals of Iterative Solvers for Linear Systems", with Dr. David Kincaid for the US Air Force's Research Center in Dayton, OH, May 2000.

1994.1997 Project Engineer at Schlumberger Austin Product Center, Austin, Texas

• Schlumberger APC-Research,

End-to-End Simulation Department (March 1996 - April 1997)

- Worked on parallelizing a physics transport code porting it to SGI PowerChallenge using MPI.
- Also involved in developing discrete event simulations for payphone systems.
- Helped evaluate High Performance Computing resources for Schlumberger for 1997 and beyond.

• Schlumberger Austin Systems Center,

Common Systems and Tools Department (Sep. 1994 - March 1996)

- Worked initially on distributed client-server architectures for software configuration mgmt system. Thereafter technical lead of SWIFT (Schlumberger World-wide Issue Filing & Tracking system), a distributed defect tracking system based on Scopus/Sybase database software. Distributed servers (servers located in various countries) were merged and kept synchronized via Scopus. Maintained contacts with tech. managers at Schlumberger engineering centers world-wide.

1991, 1992 Technical Summer Intern., Xerox Corporation - Summers 1991 and 1992. Design Research Institute at Cornell University, Ithaca, NY.

- Developed particle code to be parallelized as part of dissertation work. Summer 1992.
- Developed a parallel charge transport simulation for hypercube by building on the Parallel Basic Linear Algebra Subprogram (PBLAS) library developed by author. Summer 1991.

1997 Summer Research Intern (Su 1997), IBM T.J. Watson Research Center, Mathematical Sciences, Yorktown Heights, NY.

- Worked with Dr. Ramesh Agarwal and Dr. James W. Cooley on developing multi-tasking matrix routines for a group of IBM 3090s.
- **Chr. Michelsen Institute (CMI) - Computer Research Intern, Summer 1986.** (CMI is now known as CMR:) Division of Computer Science, Bergen, Norway.
 - Worked with Dr. Paul O. Frederickson and Dr. Richard M. Chamberlain on developing parallel matrix algorithms for the Intel iPSC Hypercube as a part of a Fortran library.
- **Norsk Hydro A/S - Computer Technician, Summer 1985** Computer Division, Porsgrunn, Norway.
 - Wrote user's manual for communication program, provided PC support.

Honors and Awards

- Invited and keynote speaker at several international conferences and workshop (see list of Presentations and Publications at <http://www.idi.ntnu.no/~elster/pubs/>)
- Nominated as Dept. of Computer & Info Science's (IDI's) candidate for the Dean's (IME's) teaching prize for fall 2010 for outstanding advising of master students.
- Honor Plaque from 2010 PhD student conference at NTNU, CSGSC, at their 10th anniversary banquet for founding this successful conference series.
- Departmental mention & flowers for service, IDI 2008 (one of 3 receiving this commendation).
- IEEE Senior Member, December 2000.
- Student Conference Award and Student Paper Competition Award for paper entitled "Basic Matrix Subprograms for Distributed Memory Systems," The Fifth Distributed Memory Conference, April 1990.
- Honorable Mention "Fast Bit-Reversal Algorithms", Conf. on Vector and Parallel Computing, June 1988.
- Fellowship – Cornell University, Spring 1987;
- Fellowship – Royal Norwegian Council for Industrial and Scientific Research, Fall 1986.
- Stipend for Outstanding Researchers, Heftyes' Memorial Fund, 1986.
- Dean's List, University of Massachusetts at Amherst, 1983-85.
- Scholarship, University of Oregon, 1981-82.
- Outstanding International Student Award, University of Oregon, 1982.
- Member, Eta Kappa Nu and Tau Beta Pi Honor Societies.

Professional activities - Summary (See later in this CV for more details):

- **Management Committee Member, COST Action IC0805: Open European Network for High Performance Computing on Complex Environments, (2009 - 2013).**
One of 4 Work Group leaders.
- **Committee member, Swedish Foundation of Strategic Research.**
Evaluated 40+ proposals for larger (SEK 4-7 million annually) projects for 100 mill SEK call on Information-intensive systems, 2011. Meetings held in Stockholm and Copenhagen.
- **Expert Panel on Reach Infrastructure, Danish Research Council EFI Link**
Budget: 600M DKr, (2007-2009)
- **HPC Committee (TRP III), Research Council of Norway (2003-2004) --** Defined Norway's current National HPC program
- **Organized and Chaired PARA'08** May 13-16, 2008 in Trondheim, Norway – Over 230 attendees from over 20 countries -- **raised over Euro 100K from sponsors.**
- **Program Committees including:**
 - ACM/IEEE SC 07, SC08 (co-chair Posters), SC'09-11, SC 13 (Workshops and Panels) IEEE IPDPS 2009-2012, ParCo' 07-09, PPAM 2009, HiPC 2010-11 , EuroGraphics 2010 , and CCP 2010
- **Journal paper reviewer for:**
 - *IEEE Trans. on Signal Processing* (2003-present),
 - *International Journal of HPCA, Comm. in Num. Methods in Engineering (CNME),*
 - *Journal of Parallel and Distributed Computing (JPDC),*
 - *SIAM Journal on Scientific and Statistical Computing (SISSC),* and *Distributed Computing* by Springer Verlag,
 - as well as reviewer of technical papers, posters and tutorials for many international conferences. (See “Program Committees under “Professional Activities”
- **Member of:**
 - ACM,
 - IEEE (Senior Member since 2000),
 - IEEE Computer Society,
 - IEEE Signal Processing Society, and
 - SIAM as well as:
 - AAAS, AAUW, AGU (Life Member),
 - NFA, NORSIG, SIMS, and Tekna
- **International standards committee member MPI: The Message Passing Interfaces Forum -- 1992-1997**
- **Organized 6 conferences and workshops and 5 minisymposi**
- **On national evaluation committee for several academic position**
- **Supervised over 50 graduate students**

Contributed to over 50 articles or programs in the Mass media

(see list after academic publications)

Research Group <http://research.idi.ntnu.no/hpc-lab>

Post Docs supervised:

- Dr. Jan Perhac (April 2010-April 2011), sponsored by ERCIM
Jan was an active participant in my research group. He helped with the THOR project which we did with HPC-Lab visitor Dr. Jose Luis Vasquez-Poletti, Assistant Professor from UCM, Spain.
- Drs. John Ryan (2010) and Ian Karlin (2011) – Shorter visits
- Dr. Henrik R. Nagel (2005-2007) – Currently at NTNU HPC Group at ITEA (Computing Center) His research focus is on using grid technology to integrate visualization and computations. Dr. Nagel also helped out with the organization of the SIMS 2005 conference that was held at NTNU in October 2005 and is the co-editor of its proceedings.

PhD Students completed:

- **Jan Christian Meyer**, Defended Dec 10, 2012, **Anne C. Elster (main advisor)**.
“Performance Modeling of Heterogeneous Systems”
Job after PhD: Research Engineer, NTNU Computing Center, HPC Group
- **Thorvald Natvig**, (PhD thesis submitted for review June 2010, defended Dec. 2010)
“Automatic Run-Time Communication and I/O Optimizations”, **Anne C. Elster (main advisor)**.
Job after PhD: “Mad Scientist”, Medalia, Palo Alto, CA, USA.
- **Cyril Banino-Rokones** – Elster supervised 2003-2006, PhD 2007 w. Dr. Lasse Natvig
 - Algorithmic and Scheduling Techniques for Heterogeneous and Distributed Computing (pdf)
 - Frist job after PhD at Yahoo!, now at EMGS.

Current PhD Students:

1. **Rune Erlend Jensen** (NTNU, estimated to finish 2013/2014), **(main advisor)**.
 - **Topic: Tools for optimizing HPC compilers**
2. **Ivar Ursin Nicolaisen** (PhD started March 29, 2012),
 - **(main advisor), Dr. Alf Birger Rustad, StatoilResearch (co-advisor)**
3. **Thomas Løfsgaard Falch** (PhD started summer 2012), **(main advisor)**
 - Topic: Heterogenous Environments for Medical imaging
4. **Samira Pakdel** (PhD started fall 2012), **(main advisor)**
5. **Lane Holloway** (Univ. of Texas at Austin, PhD proposal defense Feb 2013).
 - Prof. Donald Fussel, Computer Science UT Austin (main advisor), **(defacto co-advisor)**.
 - **Topic: Consistency verification of large interactive storylines**
6. **Eric Smistad** (NTNU, estimated to finish in 2014), Dr. Frank Lindseth (main advisor), Anne C. Elster **(co-advisor)**
 - Topic: Medical imaging on GPUs
7. **Mohammadmehdi Bozorgi**, (PhD started 2011) Dr. Frank Lindseth (main advisor), Anne C. Elster **(co-advisor)**
 - Topic: Medical imaging on GPUs

International PhD Committee/EU Evaluator:

1. **Michele Martone** (PhD Università degli Studi di Roma “Tor Vergata”, Facoltà di Ingegneria, defense May 31, 2011), **Anne C. Elster (external EU evaluator)**, Profs. Salvatore Tucci and Salvatore Filippone (main advisors): “A Quad-Tree Based Sparse BLAS Implementation for Shared Memory Parallel Computers”.
2. **Penti Huttunen**, Lappeenranta University of Technology, Finland, Dec. 2002, Thesis Title: *Data-parallel computation in parallel and distributed environments* . Advisor: Dr. Jari Porras, 1st Opponent: Dr. Kimmo Koski, Nokia (now CSC), **2nd Opponent: Anne C. Elster.**

Norwegian PhD Committees/Opponent:

1. Jochen Matthias Rau (PhD defense to be scheduled spring 2013), Department of Circulation and Medical Imaging, NTNU, “Dual Frequency Ultrasound for Suppression of Multiple Scattering”, Main advisor: Bjørn Angelsen, 1st opponent: Prof. Stuart Foster, Univ. of Toronto, Canada, 2nd Opponent: Prof. Lars Hoff, Vestfold University College, **3rd Opponent and Administrator of the defense: Anne C.Elster.**
2. **Yong Liu** (PhD defended Feb 24, 2011), Dept. of Informatics, Univ. of Tromsø, Prof. Otto Anshus (main advisor), Prof. Brian Vinter (Copenhagen Univ., 1st Opponent), **Anne C. Elster (2nd Opponent):** “Principle and Practice of Distributing Low and High Resolution Display Content from One Computer to Many Computers in Stand-alone or Display Wall Configurations
3. **Jo Skjermo** (PhD 2009), Dept. of Computer & Info. Sci, NTNU, Main advisor: Prof. Keith Downing, **Anne C. Elster (3rd opponent).** Title: “*Generation, Rendering and Animation of Polygon Tree Models*”
4. **Nicolae-Zoran Constantinescu-Fülöps** , (PhD May 2008), Dept. of Computer & Info. Sci, NTNU, Thesis title: “A Desktop Grid Computing Approach for Scientific Computing and Visualization” (pdf), supervised by Professor Richard Blake . **Anne C Elster 3rd opponent and Administrator for the defense.**
5. **Roxana Diaconescu**, (PhD 2002) Dept. of Computer & Info. Sci, NTNU Committee, Thesis title: “*Object-Based Concurrency for Data Parallel Applications: Programmability and Effectiveness*” Main advisor: Reidar Conradi , 1st Opponent: Prof. Monica Lam (Stanford), **Anne C. Elster 3rd Opponent and Administrator for the defense.**

Master students supervised by Anne C. Elster:

Current master students:

1. **Henrik H. Knutsen** -- M.Tech. (graduating summer 2013)
2. **Lars Kirkholt Melhus** -- M.Tech. (graduating summer 2013)
3. **Magnus Alvestad Mikalsen** -- M.Tech. (graduating summer 2013)
4. **Andreas Nordahl** -- M.Tech. (graduating summer 2013)
5. **Lars Espen Strand Nordhus** -- M.Tech. (graduating summer 2013)
6. **Stian Aaraas Pedersen** -- M.Tech. (graduating summer 2013)

7. **Andreas Skomedal** – M.Tech. (graduating summer 2013)
8. **Lars Martin Pedersen** – M.Tech (starting Spring 2013)
9. **Elsiabeth Solberg** – **Minformatics** (starting Spring 2013)

2012 Masters theses completed with Dr. Elster as main supervisor

10. **Geir Josten Lien** (Master of Science, IDI) "Auto-tunable GPU BLAS" **Elster main advisor**
11. **Kjetil Babington** (Master of Tech., IDI) "Combining Several Data Sources and Rendering Techniques for the HPC-Lab Snow Simulator" **Elster main advisor**
12. **Thomas Falch** (Master of Tech., IDI) "3D Visualization of X-ray Diffraction Data" **Elster main advisor**
13. **Jan Rovde** (Master of Tech., IDI) "Real-time Granular Flow Simulation Using the PCISPH Method on GPGPU Devices Using CUDA" **Elster main advisor**
14. **Frederik MJ Vestre** (Master of Tech., IDI) "Enhancing and Porting the HPC-Lab Snow Simulator to OpenCL on Mobile Platforms" **Elster main advisor**
15. **Johannes Kvam** (Master of Tech., Kyb) (main advisor: Bjorn Angelsen, **Elster co-advisor**)

2011 Masters theses completed with Dr. Elster as main advisor:

16. **Yngve Sneen Lindal** (Master og Technology, thesis, June 2011), Anne C. Elster (main advisor), Sverre Jarp (CTO, CERN, co-advisor: "Optimizing a High-Energy Physics (HEP) Toolkit on Heterogeneous Architectures".
17. **Fredrik Fossum** (Master og Technology, thesis, June 2011), Anne C. Elster (main advisor): "Real-Time Rigid Body Interactions" (on GPU)
18. **Jarle Erdal Steinsland** (Master og Technology, thesis, June 2011), Anne C. Elster (main advisor). "Auto-tunable GPU BLAS"
19. **Bent Ove Stinessen** (Master og Technology, thesis, June 2011), Anne C. Elster (main advisor), Dr. Alf Birger Rustad (Statoil Research, co-advisor): "Profiling, Optimization and Parallelization of Seismic Inversion Code".
20. **Thor Kristian Valderhaug** (Master og Technology, thesis, June 2011), Anne C. Elster (main advisor), Dr. Frank Lindseth (SINTEF Med Tech/NTNU co-advisor): "The Lattice Boltzmann Simulation on Multi-GPU Systems".

2010 Masters theses completed with Dr. Elster as main advisor:

21. **Ahmed A. Aqrabi** (Masters thesis, June 2010, Anne C. Elster (main advisor): "Effects of Compression on Data Intensive Algorithms", led to PARA 2010 presentation and IPDPS 2011 workshop paper (MTAAP)
22. **Aleksander Gjermundsen** (Masters thesis, June 2010, Anne C. Elster (main advisor): "CPU and GPU Co-Processing for Sound". Led to paper presented at PARA 2010.
23. **Andreas Hysing** (Masters thesis, July 2010, Anne C. Elster (main advisor), Dr. Alf Birger Rustad (Statoil Research, co-advisor): "Parallel Seismic Inversion for Shared Memory Systems".
24. **Øystein Krog** (Masters thesis, June 2010, Anne C. Elster (main advisor): "GPU-based Real-Time Snow Avalanche Simulations ". Led to paper presented at PARA 2010.
25. **Holger Ludvigsen** (Masters thesis, June 2010, Anne C. Elster (main advisor), Frank Lindseth (co-advisor): "Real-Time GPU-Based 3D Ultrasound Reconstruction and Visualization".

2009 Masters theses completed with Dr. Elster as main advisor:

26. **Eirik Ola Aksnes** (Master of Technology thesis, July 2009), Anne C. Elster (main advisor), Ståle Fjeldstand and Atle Rudshaug, Numerical Rocks (co-advisors) "Simulation of Fluid Flow Through Porous Rocks on Modern GPUs" Received National IBM prize, 2009 (shared with Erik Ola Aksnes and one Petroleum student)

27. **Daniel Haugen** (Master of Technology thesis, July 2009), Anne C. Elster (main advisor), Tore Fevang, Schlumberger (co-advisor): "Seismic Data Compression and GPU Memory Latency"
28. **Åsmund Herikstad** (Master of Technology thesis, July 2009), Anne C. Elster (main advisor), Svein-Erik Måsøy, MedTek, NTNU (co-advisor) "Parallel Techniques for Estimation and Correction of Aberration in Medical Ultrasound Imaging"
29. **Owe Johansen** (Masters thesis, July 2009), Anne C. Elster (main advisor), John Hybertsen and Jon André Haugen, Statoil (co-advisors): "Seismic Shot Processing on GPU"
30. **Daniele Giuseppe Spampinato** (Master of Technology thesis, July 2009), Anne C. Elster (main advisor): "Modeling Communication on Multi-GPU Systems" Received National IBM prize, 2009 (shared with Erik Ola Aksnes and one Petroleum student)
31. **Rune Johan Hovland** (Master of Technology thesis, June 2009), Anne C. Elster (main advisor), Magnus Lie Hetland (co-advisor): "Throughput Computing on Future GPUs"
32. **Henrik Hesland** (Master of Technology thesis, June 2009), Anne C. Elster (main advisor), Thorvald Natvig (co-advisor): "GPU-Enabled Interactive Pore Detection for 3D Rock Visualization "
33. **Rune Erlend Jensen** (Master of Science thesis, May 2009), Anne C. Elster (main advisor): "Techniques and Tools for Optimizing Codes on Modern Architectures: A Low-Level Approach"
34. **Robin Eidissen** (Masters thesis, January 2009), Anne C. Elster (main advisor): "Utilizing GPUs for Real-Time Visualization of Snow"

2008 Masters theses completed with Dr. Elster as main advisor:

35. **Atle Rudshaug** (Masters thesis, June 2008), Anne C. Elster (main advisor), Optimizing & Parallelizing a Large Commercial Code for Modeling Oil-well Networks – joint work with Yggdrasil, Norwegian Oils service company.
36. **Andreas Bach** (Masters thesis, September 2008), Anne C. Elster (main advisor) **Profiling and Optimizing a Seismic Application on Modern Architectures** -- joint project with Statoil

2007 Masters theses completed with Dr. Elster as main advisor:

37. **Erik Axel Nielsen** (Masters thesis, June 2007), Anne C. Elster (main advisor) "Real-time Wavelet Filtering on the GPU" -- joint project with GE Healthcare. *40 times GPU speedup of algorithm led to our implementation being adopted the same fall in their high-end cardiovascular ultrasound scanner.*
38. **Idar Borlaug** (Masters thesis, June 2007), Anne C. Elster (main advisor) Seismic Processing Using Parallel 3D FMM
39. **Knut Imar Hagen** (Masters thesis, June 2007), Anne C. Elster (main advisor) Fault-tolerance for MPI Codes on Computation Clusters joint project with Statoil Research.
40. **Christian Larsen** (Masters thesis, June 2007), Anne C. Elster (main advisor), Tore Fevang, Schlumberger (co-advisor): MS Thesis: "Framework for Polygonal Structures Computations on Clusters" , Master project (Fall 2006): "Utilizing GPUs on Cluster Computers" -- joint projects with Schumberger
41. **Nils Magnus Larsgård** (Masters thesis, June 2007), Anne C. Elster (main advisor): Framework for Converting MPI Codes to Hybrid OpenMP/MPI Codes
42. **Thibault Collet** (Masters thesis, July 2007), Anne C. Elster (advisor): Massively Online Games with Food Chains

2006 Masters theses completed with Dr. Elster as main advisor:

43. **Thorvald Natvig** (Masters thesis, January 2006), Anne C. Elster (main advisor): **Automatic Optimization of MPI Applications**
44. **Øystein Borg** (Masters thesis, June 2006), Anne C. Elster (main advisor) Håkon Bugge, SCALI (co-supervisor): Dynamic Selection of MPI Intra-copy Routines Based on Program Characteristics
45. **Ingar Saltvik** (Masters thesis, June 2006), Anne C. Elster (main advisor) **Parallel Methods for Real-Time Visualization of Snow**

2005 Masters theses completed with Dr. Elster as main advisor:

46. **Håvard Bjerke** (Masters thesis, July 2005), Anne C. Elster (main advisor), Sverre Jarp, CERN and Dan Magenheimer, HP Labs, Fort Collins, CO, USA (Co-supervisor): http://openlab-mu-internal.web.cern.ch/openlab-mu-internal/Documents/2_Technical_Documents/Master_thesis/Thesis_HavardBjerke.pdf "HPC Virtualization with Xen on Itanium"
47. **Rune Johan Andresen** (Masters thesis, July 2005), Anne C. Elster (main advisor), Rainer Toebbicke and Bernard Antoine, CERN (Co-supervisors): **HPC File Server Monitoring and Tuning**
48. **Andreas Braathen** (Masters thesis, August 2005), Anne C. Elster (main advisor), Jørn A. Amundsen (NTNU) and Alastair Bland, CERN (Co-advisors): **Hardware and Software Surveillance**

2004 Masters theses completed with Dr. Elster as main advisor:

49. **Glen Hisdal** (Masters thesis, June 2004), Anne C. Elster (main advisor), Sverre Jarp, CERN (Co-supervisor): **Service "Service Discovery Techniques for Distributed Systems using SmartFrog" (co-supervised at CERN)** *Results presented as part of PARA 2006 talk by Elster et al.*
50. **Tor Arvid Lund** (Masters thesis, June 2004), Anne C. Elster (main advisor), Jørn A. Amundsen (co-advisor) "Porting a Monte Carlo Code from Shared Memory to Computational Clusters" joint project with Jo Smiseth and Eiving Smørgrav, NTNU Dept. of Physics.
51. **Jan Christian Meyer** (Masters thesis, June 2004), Anne C. Elster (main advisor), **Load Balancing Visualisation Servers** in collaborations with Schlumberger Voxel Vision, Trondheim, Norway.
52. **Frode Nilsen** (Masters thesis, June 2004), Anne C. Elster (main advisor), **Portal Development for Grid Technologies** joint project w/ NOTUR, The Norwegian National High-Performance Computing Program.
53. **Morten Rodal** (Masters thesis, June 2004), Anne C. Elster (main advisor), Kjetil Hokstad, Statoil (co-advisor) **Scalability of Seismic Codes on Computational Clusters** joint project w/ Statoil Research
54. **Einar Råberg Rosenvinge** (Masters thesis, June 2004), Anne C. Elster (main advisor), Cyril Banino (co-supervisor) "On-line Task Scheduling on Heterogeneous Clusters: An Experimental Study" (led to paper presented at PARA'04)

2003 Masters theses completed with Dr. Elster as main advisor:

55. **Robin Holtet** (Masters thesis, June 2003), Anne C. Elster (main advisor): "Communications-reducing Stencil-based Algorithms and Methods" (*IDI & ITEA*) 2003-2004; *presently at Oslo company*
56. **Torbjørn Vik** (Masters thesis, June 2003), Anne C. Elster (main advisor): **Real-Time Visual Simulation of Smoke**
57. **Åsmund Østvold** (Masters thesis, June 2003), Anne C. Elster (main advisor), Håkon Bugge, Scali AS (so-supervisor): Tidsmåleteknikker for MPI kollektive kommunikasjons operasjoner

Other students supervised:

- **Johannes Kvam**, Master of Tech. in Cybernetics, NTNU, Bjørn Angelsen (main advisor)
Anne C. Elster (co-supervisor)
- **Hallgeir Lien** -- Elster main advisor for 5th year fall project 2011
- **Joel Chelliah** -- Elster main advisor for 5th year fall project 2010
- **Jostein Tveit** – Elster main advisor for 5th year fall project 2002 – now at BBS
- **Paul Sack** (honors BS project 2000, UT Austin) -- Summer jobs at NTNU HPC Center, IBM Yorktown and Intel; @ MS U of Illinois at Urbana-Champaign (UIUC) 2005, current PhD student at UIUC
- **Charles de Vane** (Master's thesis, Computer Science, Cornell University – Anne C. Elster (co-advisor), Main advisor: Prof. Keshav Pingali: Topic: “Parallel Choleski Factorization on the BBN System
- Supervised 7 individual projects for the second semester graduate course on numerical methods for Partial Differential Equations, U of Texas, spring 1999. One of these projects were later expanded into two conference presentations, other were related to students' MS and PhD theses.

Recent International HPC-Lab visitors:

- **PhD student Grant Strong**, Dept. of Compute Science, Memorial University located in St. John's, Newfoundland, Canada and supervised by Dr. Minglun Gong (<http://www.cs.mun.ca/~gong/>) supported by a NSERC CGS-MSFSS grant from the the Natural Sciences and Engineering Research Council of Canada. Spring 2012. He will be visiting us again Feb-April 2013.
- **PhD student Miguel Angel Martinez del Amor** from Univ. of Seville, Sevilla, Spain, main supervisor Dr. Mario de J. Perez Jimenez, PhD student Miguel Angel Martinez del Amor from Univ. of Seville, Sevilla, Spain, main supervisor Dr. Mario de J. Perez Jimenez, visited with us July 1 – Sept 30, 2011.
- **Dr. José Luis Vázquez Poletti**, Post Doc (PhD Oct 2008), Departamento de Arquitectura de Computadores y Automática, Facultad de Informática, UCM (Universidad Complutense de Madrid), Spain. (June 6 – August 15, 2010, including PARA 2010. Supported by “UCM-EEA Abel and Munch Extraordinary Chairs”, NILS mobility EEA grant.
- **Graduate students Krystyna Napierala and Jarek Palczynski** from Poznan, Polen, June 21-23, 2010. Sponsored by their home institution.

Current HPC-Lab student visitors:

- **Ruben G. Spaans** M.Eng. IDI 2011, M.Sc. Mathematical Science 2013, potential PhD candidate at HPC-Lab
- **Johannes Kvam** M.Eng. Cybernetics 2012, B. Angelsen main advisor, Interim proj. while waiting for PhD funding
- **Ole Martin Brende** PhD student in MedTech w/ B. Angelsen/St.Olav
- **Tollef Jahren** Master student in Physics w/ B. Angelsen
- **Andreas Helmich Hunderi** Master student w/ Frank Lindseth
- **Nesaha Karunaharan** Master student w/ Frank Lindseth

Research Funding

- **IBM SUR grant at University of Texas at Austin, 1998** (co-PI with Prof. David M. Young and Dr. David R. Kincaid).
- **NOTUR 2004 Competency projects on GRID, Cluster and Storage Technologies (via NFR)** This project was a joint effort by NTNU, U of Bergen, U of Oslo, U of Tromsø and UNINETT. Elster PI and raised NOK 1 million at NTNU for these projects, which made us the largest partner. These funds were matched by the Research Council of Norway (RCN) which also added in NOK 450K for expanded storage Hardware that was installed at NTNU's HPC facility for the use of Met.no. **Total 2004 budget at NTNU including NOK 1.45 million from RCN: NOK 2.45 million** The projects ran through 2004. Several of her students were involved in the GRID and cluster subprojects. Elster also got some of her colleagues at IDI involved in the storage subproject.
- **NOTUR Emerging Technologies: Cluster Technologies**
Looked at emerging cluster technologies for Norwegian HPC users.
Elster PI/Project leader. Budget 2003: NOK 1 million
- **Statoil Research Grant “Heterogeneous Framework for Flow Simulations”, Anne C. Elster, PI. Worth NOK 2.4 million** including PhD stipend support, (March 2012-2015). I found a good Norwegian candidate which was one of the main challenges. He was the TA for my parallel programming course in Fall 2011. My other TA is also interested in a PhD, but may not start until 2013 due to other commitments.
- **Computational Medical Visualization IME/DMF Research Grant.** Frank Lindseth, Anne C. Elster and Trond Kvamsdal (co-PIs), 2010-2013. Received funding for 3 PhD students. With overhead worth close to NOK3mill per year. Funded by IME Dean's office strategy funds. (Preliminary application went to Med. Techn. at NTNU who is now co-funding part of it. My PhD student Thomas L. Falch hired on this grant starting Jul 1, 2012.
- Parallel and Heterogeneous Real-Time Systems Lab. Advanced Research Equipment grant, NTNU IME Strategy funds. Anne C: Elster (PI). **Approved Sept 2011 for NOK 1 million in equipment and support 2012-2013.**
- **NVIDIA CUDA Research Center (2012) – Elster is PI.**
Several high-end graphics cards have already been donated to my lab from NVIDIA 2008-present as part of my participation in their Professor Affiliation's program. Total value so far: over NOK 200 000.
- **NVIDIA CUDA Teaching Center – Univ. of Texas at Austin. Anne C. Elster (Main PI),** Profs Keshav Pingaly (CS UT Austin) and Mattan Erez (UT ECE) co-PIs. Received 18 GTX 480 cards and USD 7500 for extra TA support (later matched by ECE Dept.
- **CUDA Teaching Center – NTNU. Anne C. Elster (PI).** Received 20 GTX 480 card + 2070 Tesla Card (NOK 100 000+ value) + USD 10 000 in TA support for course development.
- **Post Doc support** for Dr. Ian Karlin (PhD U of Colorado, Boulder with Prof. Liz Jessup as advisor). Was offered job at Sandia Labs in the US, but chose us! 2-yr grant (2011-2013) from Dean's office. However, left us after 4 months due to wife's visa issues.

- **PhD stipend for Rune E. Jensen** – funded by Dean’s office after he receive national prize for his master’s thesis (2010-2013). Value ca. 1 mill/year.
- **Several equipment grants from Dept.**, including cluster used for teaching and research. **Latest upgrade in 2010 worth NOK 120 000. Elster is PI.**
- **PhD support for Jan Christian Meyer (2007-2010) from Dean’s office.** Grant I completion with many others and needed research plan, etc. Work close over 3 million total with 4th year TA support. Meyer taught my course while I was on sabbatical 2010/11 at UT Austin. PhD defense Dec 10, 2012.
- **Forskingskole (MS direct-to-PhD grant) grant for Thorvald Natvig** from Department. Thorvald finished his dissertation summer 2010 and defended it Dec 2010 (min. 3 month review required by NTNU.)
- **Equipment grant and travel support from Schlumberger for SC 2008 stand.**
- **Brought in over NOK 1 mill for the PARA 2008 conference.** Support came from:
 - The Research Council of Norway, NOTUR (the Norwegian HPC Project),
 - The NTNU IO Center,
 - The NTNU Computational Science and Visualization Program,
 - US Office of Naval Research Global, and
 - IBM, Microsoft,
 - The MathWorks, Ceetron,
 - Synetic Labs (Sweden),
 - NVIDIA, Schlumberge and
 - Statoil
 - The City of Trondheim (hosted a reception at the Arch Bishop’s Palace).
 - in addition to my department and my Dean’s office.
 It was fun, but a lot of work!
- Several travel grants and support for our NTNU stand at SC2008-2012 from NTNU IME (Dean’s office), Program for Computational Science at NTNU (BVV) and Special Interest Group on Multi-Core Programming (SIG MultiCore), IME, NTNU.
- Several “smådriftsmidler” (small discretionary spending grants (ca. NOK 50-120 000/yr) for travel, smaller research equipments/upgrades, etc. Sponsored by The Research Council of Norway via NTNU. Several of these required matched funding.
- Several fellowship, travel grants etc. as a graduate student at Cornell University

Selected Professional Service

International Committees and Projects

- **Management Committee Member, EU COST Action IC0805: Open European Network for High Performance Computing on Complex Environments, (2009 -)**.
Leading Numerical Algorithms Working Group (one of 4 working groups)
- **Committee member, Swedish Foundation of Strategic Research**. Evaluated 40+ proposals for large (SEK 4-7 million annually) projects for 100 mill SEK call on Information-intensive systems, 2011. Meetings held in Stockholm and Copenhagen
- **Member** Expert Advisory Panel on Research Infrastructure reporting to the Research and Innovation leadership of the Dept. of Science, Technology and Development, Danish Government. Elster was one of 3 of 8 on the panel representing engineering and science. Advised DKR 600 million (2007-2009) budget. Related information at: [Link](#)
- **Board Member** of [SIMS \(Scandinavian Simulation Society\)](#),
- **Committee Member** Nordic European Grid -- a consortium working on part of the EU GRID project application for EU FP6. The Nordic countries' [NORDUGRID](#) play a major role here.

International Standards Committee

- **International Standards Committee Member (1992-1997)**. [MPI: The Message Passing Interfaces Forum](#), Represented Cornell University 1992-1994 and Schlumberger 1995-1997.

Conferences and Workshops Organized

- IEEE Cluster 2010, co-organized workshop related to COST action on High Performance Computing on Complex Environments as one of 4 working group leaders.
- [PARA 2008](#) , May 13-16, 2008, Trondheim, Norway - General Chair. Raised over NOK 1 million for conference
- CSE Workshop in Trondheim Oct. 15, 2003 -- [Info & Program](#) (co-organized)
- [NTNU CS Graduate Student Conference](#) Organized the first conference held in 2001, and was a co-organizer in 2002. The conference series has been very successful and is more popular than ever.
- [DMY-98 Symposium](#) IMACS (International Symposium on Iterative Methods) Symposium organized at University of Texas at Austin honoring Dr. David M. Young,

Minisymposia Organized

- **Minisymposium on GPU Computing/EuroGPU 2010 at PARA 2010**, Iceland, 8 talks EuroGPU, co-organized with Stephane Requena (GENCI, France), Two-day Minisymposium on GPU Computing at ParCo 2009, Lyon, France, September 1-2. 2009.
- **Minisymposium on Scientific Computing on GPUs**, PARA 2008, Trondheim, Norway, May 2008. Co-organizers: Enrique S. Quintana-Orti, Jose R. Herrero and Anne C. Elster, [Link to the 12 talks](#).
- **Minisymposium on HPC Environments: Visualization and Parallelization Tools at PARA'06** in Umeå, Sweden, June 18-21, 2006. The Minisymposium has 12 speakers.
- **Minisymposium on Cluster Computing at PARCO 2003**
<http://rparco.urz.tudresden.de/PARCO2003/schedule.php>
- **Minisymposium on Parallel Iterative Methods** (together with Dr. David R. Kincaid) at

Tenth SIAM Conf. on Parallel Processing for Scientific Computing, March 12-14, 2001,
Portsmouth, VA, USA. <http://www.siam.org/confpart/showmin.cfm?SESSIONCODE=231>

Reviewer

- Research proposal for Swedish Foundation of Strategic Research
- Research proposals for the Danish Research Ministry
- International Journals including:
- *IEEE Trans. on Parallel and Distributed Systems*
- *Journal of Parallel and Distributed Computing (JPDC)*,
- *Software Practice and Experience (JWiley)*
- *IEEE Trans. on Signal Processing* (2003-present),
- *International Journal of HPCA, Comm. in Num. Methods in Engineering (CNME)*,
- *SIAM Journal on Scientific and Statistical Computing (SISSC)*, and *Distributed Computing* by Springer Verlag,
- **Also reviewer of technical papers, posters and tutorials for many international conferences.** (See “Program Committees”) as well as Reviewer for NIK 2001 and NIK 2002 .

Session Chair – Conferences:

Dr. Elster has served as session chair at many conferences dating back to HCAA4 (The fourth Conference on Hypercubes , Concurrent Computers and Applications) in March 1989 in Monterrey, California. Recent conferences not listed under “Program Committee” include PARA 2004 in Copenhagen and SIMS 2001

http://www2.hit.no/tf/sims2001/sims/programme_files/programme_main.htm

National Committees and Projects

- **Committee Member HPC Committee (TRP III), Research Council of Norway (2003-2004)** Serving with: RCN representative Dr. Hilde Erlandsen , Roar Skålin,(Norwegian Meteorological Institute (met.no), now NFR) ,
- Assoc. Prof. (Universitetslektor) Lina von Sydow, Univ. of Uppsala, Sweden; RCN representative Dr. Gundmund Høst; Professor Knut Børve, Univ of Bergen, Norway; and Professor Risto Nieminen, Helsinki Univ. of Technology, Finland (leader).
- **Project Leader -- subproject on Emerging Technologies (ET) -- Cluster Technologies** within **NOTUR** (Norwegian High Performance Consortium). This subproject is a coordinated effort between NTNU and Univ. of Tromsø with anticipated funding through 2003 in excess of NOK 1million. A similiar subproject withing NOTUR-ET is on Grid Technology between Univ. of Oslo and Univ. of Bergen lead by Harald S. Simonsen (USIT/UiO).
- **National Evaluation Committee** regarding tenured position at Univ. of Tromsø
National Evaluation Committee regarding promotion at Akershus College.
- **Alternate Board Member (vara)** of **NOTUR** (Norwegian National High Performance Computational Program), (fall 2001 - Oct. 2002) for **Assoc. Prof. Anne Kværnø**, Math, NTNU. **Prof. Lasse Natvig**, IDI, was my replacement while I was on leave Spring 2002.

University-level service (NTNU)

- **Director – Computaiona Science “Light-house”, inter departmental seeding grant from Dean to support research between Computer & Information Science & Applied Mathematics. Bill be part of upcoming Center for Comptuational Science about to be established at NTNU in collaboration with SINTEF.**
- **Co-Founder and Co-Director Computational Science and Engineering Program at NTNU** (2003 – 2006, 2012). Program is part of NTNU's [ICT strategic initiative](#). Together with Prof. Einar Rønquist from our Applied Mathematics department, I was the original co-director for this program, responsible for HPC Infrastructure and Computer Science, whereas Prof. Rønquist represented Numerical Analysis. In 2007, NTNU was awarded the new national supercomputer co-funded by the Research Council of Norway. Its budget was NOK 30 million for the supercomputer system and another NOK 20 million invested by NTNU in related infrastructure. (incl. a new machine room and a large back-up power system). In Jan. 2007, I handed my position over to Dr. Jørn Amundsen to focus on other things related to HPC research. I resumed this position as Dr. Amundsen left his main NTNU position to join Uninett Sigma.
- **Chair of Special Interest Group (SIG) in Multicore Programming, Faculty of Information Science, Electrical Engineering and Mathematics (IME), NTNU, 2011-2012.**
- **Stand organizer** for Science fair “Teknologidagene” at NTNU Sept. 2010 - present
Attended by 1200+ high school students and their teachers,
- **INFOSAM 2020 Member**, "InfoSam 2020 The Information Society of 2020 - an exercise in planning for the future", collaboration between the Faculty (College) of Information Technology and Mathematics (IME), NTNU and Teknologirådet the (Technological Council). Elster's participation included serving on a panel and being the co-author of two position papers (see [Elster's list of Publications](#))
- **Member -- NTNU's Committee of Computational Research and Education** (BFU (Utvalg for beregningsorientert forskning og undervisning)) (Fall 2002 – 2003)
- **Member – Dean's executive group (ledergruppe) , Strategic Univ. Program in Medical Technology (Fall 2002 and Spring 2003) –** alternate for Pauline Haddow.
- **Committee Member** of [Computational Science & Engin. project at NTNU](#) , Jan 2001-2004

Department-level service (IDI/NTNU)

- **Department Section Head** (2009-10) – Section for Complex systems (incl HPC, Algorithms, Computer Architecture and Graphics). **One of 4 section leaders in the Dept. of 8 full-time, 5 adjunct faculty members + Post Docs and grad students.**
- **Faculty sponsor of programming contests** NCPC (Norwegian Collegiate Programming Contest – organized under the international ACM contest) (2006-2010) and IDI Open (2006-2010) a local programming event held in spring. Since I took over, these contest have been extremely successful with over 170 students participating last year and over 250 (IDI Open Spring 2010). I have also been the **National sponsor** 2008-2010. I have also been involved in the fund raising for these events.
- **Alternate Member -- Teaching Committee**, Dept. of Computer and Information Science, NTNU (summer 2005 - present). See: <http://www.idi.ntnu.no/english/organization/> for a list of current members, committees, etc.
- **Department Board Member** -- Dept. of Computer and Information Science, NTNU (spring 2001 - 2005). See: <http://www.idi.ntnu.no/english/organization/> for a list of current members, committees, etc.
- **Member -- Committee of Physical Resources** -- Dept. of Computer and Information Science, NTNU (spring 2001 - 2005). See: <http://www.idi.ntnu.no/english/organization/> for a list of current members, committees, etc.
- **Alternate member -- Committee of Infrastructure and Research Equipment** -- Dept. of (spring 2001 – 2005).
- **Floor Fire "Chief" (HMS)**, 2002-2003. Duty was passed on April 1, 2003.

Professional Memberships:

- [ACM](#)
- [IEEE](#) , Senior Member since 2000: Joined as Student Member 1983)
- [IEEE Computer Society](#),
- Student Section Vice President 1983-84 (Univ. of Massachusetts at Amherst)
- Student Section President 1984-85 (University of Massachusetts at Amherst)
- [IEEE Signal Processing Society](#) , [IEEE Women in Engineering](#) , and
- [SIAM](#) – Life member
- [Tekna](#) (Norwegian Engineering Society)
- [AGU \(American Geophysical Union\)](#) -- Life member

Teaching - Summary

(see also <http://www.idi.ntnu.no/~elster/teaching.html>)

- DT8117 Grid Techn. and Heterogeneous Computing (Spring 2013)
- DT8117 Grid Techn. and Heterogeneous Computing -- new PhD-level course Spring 2009

- TDT 4200 Parallel Computing - Fall 2012 – 45 students
- TDT 4200 Parallel Computing - Fall 2011
- TDT 4200 Parallel Computing - Fall 2009
- TDT 4200 Parallel Computing - Spring 2008
- TDT 4200 Parallel Computing - Spring 2007
- TDT 4200 Parallel Computing - Spring 2006
- TDT 4200 Parallel Computing - Spring 2004
- TDT 4200 Parallel Computing - Spring 2003

- TDT 24 Parallel Environments & Numerical Methods (Fall 2008)
- TDT 24 Parallel Environments & Numerical Methods (Fall 2007)
- TDT 24 Parallel Environments & Numerical Methods (Fall 2006)
- TDT 24 Parallel Environments & Numerical Methods (Fall 2003)
- TDT 24 Parallel Environments & Numerical Methods (Fall 2002)
- TDT 24 Parallel Environments & Numerical Methods (Fall 2001)

- TDT 4205-1 Compilers/Kompilorteknikk (Spring 2013) 80+ students currently
- TDT 4205-1 Compilers/Kompilorteknikk (Spring 2012) 59 students took final
- TDT 4205-1 Compilers/Kompilorteknikk (Spring 2010) 50+ students
- TDT 4205-1 Compilers/Kompilorteknikk (Fall 2008)
- TDT 4205-1 Compilers/Kompilorteknikk (Fall 2007)
- TDT 4205-1 Compilers/Kompilorteknikk (Fall 2006)

- DIF 8916 -- Topics in Computer and Info.Science (Spring 2001)
-- PhD research techniques course
- SIF 8041 -- Operating Systems & Databases (Spring 2001)

Courses taught at Univ. of Texas at Austin, USA (ECE, CS and Math):

- EE 360 "Conference course" (individuell lesepensum) on "Special Problems in Parallel Computing" (Spring 2002). The student is now in the Computer Science Ms/PhD Program at Univ. of Illinois Urbana-Champaign.
- Supervised EE 464H -- ECE Honors Student Project,(Summer 2001).
- EE 360P -- Operating Systems (Fall 2000)
- EE 360C -- Data Structures in C++ (CS7) (Summer 2000)
- CS/M 393N -- Numerical Solutions to Elliptic Partial Differential Equations (Spring 1999)
-- a second level grad. course on iterative PDE methods (lectured for Dr. David M. Young)
- M 340L (Spring 1999) -- Linear Algebra for non-math majors. -- Assisted with exams and gave several guest lectures.
- CS 328 -- Abstract Data Types (CS7, incl. graph algorithms) (Summer 1998) -- taught in C++.
- CS 315 -- Data Structures (CS2)(Summer 1997) -- taught in C++.

Course taught through Acenor Inc.:

- Parallel numerical methods course for US Air Force's Research Lab at WPAFB, May 2000

Pedagogically related experience - some details

- Course development for upper division courses on parallel computing (see Teaching)
- Participant in Committee which developed "IT-emner"/ Topics in Computer Science, a PhD level course, in early spring 2001. My active participation on this committee lead me to become the official instructor for this course for Spring 2001 (see Pedagogical Experience). The committee met several time to develop the specifications for this course which was completely revamped from its previous incarnation.
- Developed and organized the first NTNU Computer Science Graduate Conference, May 2001, as a pedagogical tool to help our graduate students get started with research, broaden their perspectives of Computer Science. This kind of conference teaches them how to review papers, write papers, as well as teaches them how to present their work through peer and faculty feed-back.
- Was responsible for the course text-book for Data Structures (CS at UT Austin) being switched after I reviewed several Data Structures texts and decided the current book that was in use was not optimal. Wrote up an evaluation to the Department.
- In May 2000 I co-taught a 2-day tutorial on Numerical Methods for PDEs for the US Air Force Research Lab at WPAFB in Dayton, Ohio, USA through my US company ACENOR INC. Together with my co-organizer Dr. David Kincaid, we developed the 2-day course from scratch on request from WPAFB, including the workbook with copies of the slides presented. The course was attended by USAF researchers from throughout the USA.
- I visited EECS at MIT fall 2000 where I discussed their new direct-to-MS program, as well as other pedagogical issues with faculty members both on the CS and EE side. Their new Masters of engineering thesis project program specifically encourages their brightest seniors to pick up a Master of Engineering project. For more information, including information on their new course for this program, 6.191-Prototyping Research Results, see <http://wilson.ai.mit.edu/courses/6191/index.html>

Public Service

- **Contributed to over 50 articles or programs in the Mass media**
- (see list after academic publications) including comments on [Leader's Bolg at the Norwegian Research Council. Link](#). And a [two-page "Kronikk" in Dagbladet \(2010\)](#) both arguing for increased funding for basic IT in Norway. The latter article led to meetings with policy makers at the Parliament. I expect this work to continue as I feel strongly it is important to make the public aware of the importance of IT research.
- HPC-Lab stand at several NTNU "Researcher's Night" where high school students and teachers are invited to get a taste of research at NTNU.
<http://www.ntnu.no/forskningsdagene/night>
- Prepared and co-organized panel for Grace Hopper Conference for Women in 2002, Vancouver, Canada together with "Jenter og Data" project leader at IDI.
- Originator and author of "Women in Academia" web page (now taken over similar services)
- Board member of Schlumbergers employee club, Austin Systems Center (1995-1996)
- Expanding Your Horizons encore speaker – US locally organized conferences for middle school (6th-9th grade) female pupils to get them interested in engineering and science. Did this both while at Cornell and at Univ. of Texas at Austin.
- Served on the following local organizational boards:
 - Trondheim International School's Pre-School (2008-2010)
 - AL Øvre Bakklandet 1A (Board member for community of 80+ living units, 2009-2010)
 - Singsakerbakken 17 (Chair 2006, board member 2003-present)
- Founding member of Graduate Student Advocacy group at Cornell University, USA.
- IEEE Computer society student chapter President (1984-85) and Vice President (1983-84)
- Eta Kappa Nu Officer (1984-85), Univ. of Massachusetts at Amherst student chapter.

Leisure interests:

- Voice (studied under Nadia Brown (Ithaca College) and Dr. Cynthia Karnstadt (Univ. of Texas at Austin))
- Swimming and Tennis (lately focused on latter)
- Ham radio (US call sign N3ACE) and
- Tropical fish (have in the past raised tap-water discus)

REFERENCES AVAILABLE UPON REQUEST
LIST OF TALKS AND PULICATIONS FOLLOW

List of Dr. Elster's Academic Publications and Presentations

Invited Lectures

Book and Book Chapters

Reviewed Articles

Reviewed Conference Abstracts and Posters

Position papers, Technical Reports and Other Selected Written Publications

Selected other Presentations and Abstracts

INVITED LECTURES, TUTORIALS AND CONFERENCE PANELS:

1. Invited presentation at [3rd Workshop of EU COST 0805 Open Network for HPC on Complex Environments](#), April 17-18, 2012, Genoa, Italy: "Complex HPC Challenges: Some Compiler, Library and Application Issues"
2. Invited presentation at [2nd Workshop of EU COST 0805 Open Network for HPC on Complex Environments](#), January 25-25, 2012, Timisoara, Romania: "From Many-Cores to Multi-Scale: Some Challenges and Opportunities for Numerical Analysis in Complex HPC Environments".
3. Invited presentation at AMD Fusion Developer Summit, Seattle, WA, USA, June 2011. **Over 70 international researchers attended talk.** "Real-Time Processing in OpenCL on GPUs". [Video of 40 min. talk. PDF of the 84 slides used:](#)
http://developer.amd.com/afds/assets/presentations/1382_final.pdf
4. [Closing Plenary Speaker --NORDUNET 2011](#), Reykjavik, Iceland, June 9, 2011
"Heterogeneous Computing & Networking:Current and Future Trends".
5. [Invited speaker – SimGPU](#) (International Symposium "Computer Simulations on GPU"), Mainz,Germany, May 30- June 1, 2011: "GPU-based Simulations, Data Locality and Some FutureTrends" .
6. [Invited guest lecturer](#), Dept. of Computer Science, Univ. of Tromsø, Feb. 25, 2011. "[Real-Time Processing on GPU-based Systems: Experiences and Challenges](#)"
7. [Invited Lecture \(50 minutes\) at IMA workshop High Performance Computing and Emerging Architectures](#) , January 10-14, 2011, University of Minnesota, USA: "[Real-Time Medical and Geological Processing on GPU-based Systems: Experiences and Challenges](#)".
8. [Invited speaker at CCP2010: \(22nd International Conference on Computational Physics\)](#) held at Norwegian Univ. of Science and Technology (NTNU), June 23-26, 2010, Talk title:"Computational Physics on GPUs".
9. Dr. Elster organized Minisymposium on GPU Computing/EuroGPU 2010 at [PARA 2010](#) June 8-10, 2010, where she also gave talk on "[Current and Future Trends in GPU Computing](#)"
10. Invited Speaker -- 8th International Conference on Parallel Processing and Applied Mathematics (PPAM 2009), Sept 15, 2009, Wroclaw, Poland: "Real-Time Parallel Computing Using GPUs"
<http://www.ppam.pl/docs/program.pdf>
11. Invited Speaker -- The Eighth Annual Meeting on High Performance Computing and Infrastructure in Norway (NOTUR 2009), May 18-20, 2008, "High Performance Computing on GPUs"
<http://www.notur.no/notur2009/programme.html>
12. Invited Speaker -- NVIDIA Tesla Supercomputer - European Launch, Dec 4, 2008, London, UK: "GPU Supercomputing at The IDI/NTNU HPC-Lab"

13. Tutorial -- PARA 2008, May 13, 2008, "Tutorial on Optimization Techniques for Scientific Codes" with her graduate student Mr. Rune Jensen
14. Invited Speaker -- IBM High Performance Computing Competence Center Opening in Vienna, Austria, March 31, 2008 "Parallel Scientific Computing Trends at NTNU"
15. Minisymposium talk, PPAM 2007, Tuesday September 11, "Scientific Computing on GPUs" part of Minisymposium on Novel Data Formats organized by Fred Gustavson (IBM, USA) and Jerzy Wasniewski (DTU, Denmark)
16. Invited Speaker, DEM Workshop: PETRUSCA -- Petrophysics Under Stress -- Core Applications, SINTEF Petroleum Research, March 6, 2007. Title: "High Performance Computing: Current and Future Opportunities"
17. Invited Speaker -- Seminar connected with Computational Physics Group Board meeting, European Physical Society (EPS), NTNU, Sep. 29, 2006. Title: "Computational Science & Visualization at NTNU". Contact/Organizer: Perof. Alex Hansen, Dept. of Physics, NTNU
18. Invited Speaker -- Computing the Future Series: Lectures in Computational Science, Engineering, and Mathematics sponsored by the LSU Center for Computation & Technology, Louisiana State University, Baton Rouge, LA, Dec. 12, 2005, Title: "Current and Future Trends in HPC: An International Perspective".
<http://www.cct.lsu.edu/events/talks/Current%20and%20Future%20Trends%20in%20HPC>
19. Worskhop Panel "Towards simulation-based science and engineering", INFORSAM 2020, April 19, 2004, NTNU Panel Chair: Prof. Helge Holden. Also part of Enabling Technologies/Computation.
<http://www.ime.ntnu.no/infosam2020/oldpage/Conference/program1.html>
20. Minisymposium Talk -- SIAM Conf. on Parallel Processing, San Francisco, Feb. 25, 2004, "PIC codes: Scalability, Shared Memory versus Message Passing and Other Software Issues" as part of MS30: "Parallel Algorithms for Particle-Based Simulation Methods", organized by Dr. Paul E. Plassman, Pennsylvania State University, US
<http://www.siam.org/meetings/pp04/index.htm>
21. Conference Talk -- NOTUR 2003, University of Oslo, May 14-15, 2003, "Technology for the Future: Clusters" <http://www.notur.org/notur2003/>
22. Conference Panel -- Panel discussion: "High Performance Computing in Nordic Countries", Moderator: Jack Dongarra, Participating as a representative from Norway with: Jari Järvinen (Finland) , Jerzy Wasniewski (Denmark) and Anders Ynnermann (Sweden), PARA 2002, June 17, 2002, Espoo, Finland. Program at: <http://www.csc.fi/para2002/program.phtml>
23. Colloquium -- Dept. of Computer & Info Science, NTNU, Trondheim, Norway, Oct. 26, 2001: "Supercomputing Issues". Abstract at: <http://www.idi.ntnu.no/~ekaterip/dif8916/info-emnerarkiv.html#Elster> Presentation slides available at: <http://www.ece.utexas.edu/~elster/talks/para-it-emner-okt01/index.htm>
24. DSP Seminar -- Dept. of Electrical & Comp. Engineering, University of Texas at Austin, Sept. 28, 2001: "Chebyshev Polynomials -- Not Just for Filters". Abstract at: http://signal.ece.utexas.edu/seminars/dsp_seminars/01fall/elster.html
25. Guest Lecture -- Dept. of Electrical & Comp. Engineering, University of Texas at Austin, Sept. 26, 2001: "Number Systems and Bit-reversal Algorithms" given to EE 306: Introduction to Computing, a freshman class with over 450 students attending.
26. DSP Seminar -- Dept. of Electrical & Comp. Engineering, University of Texas at Austin, April 12, 2001:

"FFT Applications". Abstract at:

http://signal.ece.utexas.edu/seminars/dsp_seminars/01spring/elster.html

27. Minisymposium -- SIAM Annual Meeting 2000 in Puerto Rico, July 10-14, 2000:
"Complex Chebyshev Acceleration Using PETSc",
Part of Mini Symposium organized by Dr. David Kincaid on "Iterative Methods: Honoring Professor David M. Young". Work is joint with Chun Liang and David M. Young.
Schedule at: <http://www.siam.org/meetings/an00/MS49.htm>
28. Graduate Lecture -- Department of Computer & Info. Science, Norwegian Institute of Technology (NTNU), February 11, 2000:
"Optimization of Numerical Algorithms (Focus: FFT and Bit-Reversal Algorithms)"
(Translation of Norwegian title.)
29. Undergraduate Lecture -- Department of Computer & Info. Science, Norwegian Institute of Technology (NTNU), February 11, 2000:
"Examples Which Illustrate the Practical Benefits of Improved Algorithmic Time-Complexity"
(Translation of Norwegian title.)
30. Telecommunications and Signal Processing Seminar -- Dept of ECE, University of Texas at Austin, Texas, November 10, 1999:
"Fast Fourier Transform and Fast Bit Reversal Algorithms"
http://anchovy.ece.utexas.edu/seminars/dsp_seminars/99fall/elster.html
31. Colloquium -- Dept. of Computer and Information Science, Norwegian Institute of Technology (NTNU), Trondheim, October 8, 1999:
"Developments in Parallel Computing the past 15 years -- A Personal Perspective".
(Translation of Norwegian title.)
32. Seminar -- Dept. of Computer Science, Univ. of Bordeaux, Bordeaux, France, Jan. 12 and 14, 1999:
"Algorithms for Bit Reversal and the The Fast Fourier Transform"
<http://dept-info.labri.u-bordeaux.fr/~betrema/seminaire.html>
33. Colloquium -- Dept of Comp. Science, Univ. of Southern California, Oct. 31, 1997:
"Building a Software Environment for Analyzing and Testing Large Parallel Scientific Codes".
34. Seminar -- Center for Numerical Analysis, Univ. of Texas at Austin, May 12, 1994:
"Parallelization Issues and Particle Simulation Codes".
35. Seminar -- Dept. of Computer Science, University of Houston, Texas, May 11, 1994:
(same as May 12, 1994 presentation).
36. Seminar -- Dept. of Computer Science, Syracuse University, New York, April 20, 1994:
(same as May 12, 1994 presentation).
37. Seminar -- Dept. of Electrical and Computer Engineering, University of California, Irvine, March 9, 1989:
"Developing Efficient Algorithms for Highly Parallel Systems".
38. Technical Seminar -- IBM Almaden Research Center, San Jose, California, March 2, 1989:
(same as March 9, 1989 presentation).
39. Colloquium -- Dept. of Electrical and Computer Engineering, Rice University, Houston, Texas, Oct. 25, 1988:
"Parallel Operations: A Polymorphic View"
40. SIAM Conf. on Iterative Methods for Large Linear Systems, Austin, Texas, Oct. 21, 1988:
"Parallel Operations for Iterative Methods: A Polymorphic View".
41. Colloquium -- Dept. of Computer Science, University of Umeå, Sweden, Aug. 5, 1988:

"Fault-Tolerant Matrix-Vector Multiplication on Hypercubes"

42. Supercomputer Seminar Series -- Center for Numerical Analysis, Univ. of Texas at Austin, March 13, 1987:

"Matrix Operations on Hypercube Systems".

43. Technical Seminar - Chr. Michelsen Institute, Division of Computer Science, Bergen, Norway, July 16, 1986:

"SIMD Systems and Parallel Pascal".

BOOK & BOOK CHAPTERS:

1. Anne C. Elster and Jerzy Wasniewski (co-editors) *Springer LNCS* Volume on selected papers from PARA 2008 (to be published)
2. David R. Kincaid and Anne C. Elster (co-editors) *Iterative Methods in Scientific Computation II*, Book published August 1999 through IMACS based on the papers presented at the Fourth IMACS International Symposium on Iterative Methods in Scientific Computation, Austin, Texas, Oct. 1998.
3. Elster, A.C. "Software Test-bed for Large Parallel Solvers ", in book *Iterative Methods in Scientific Computation II*, IMACS, 1999. Paper was originally presented at Fourth IMACS International Symposium, Oct. 18-20, 1998, The Univ. of Texas at Austin. Abstract at: <http://king.ticam.utexas.edu/dmy98/abstracts.html>
4. Cavallaro, Joseph R. (Rice University), and Elster, A.C., "A CORDIC Processor Array for the SVD of a Complex Matrix", BOOK ARTICLE in *SVD and Signal Processing, II: Algorithms, Analysis and Applications*, Ed. R. J. Vaccaro, Elsevier, 1991, pp 227-239. [Revision of same title in Proc. of the 2nd Intern'l Workshop on SVD and Signal Processing, pp 66-73, Kingston, RI, June 25-27, 1990.]

REVIEWED ARTICLES:

2012

1. Falch, Thomas Løfsgaard; Fløystad, Jostein Bø; Elster, Anne C.; Breiby, Dag Werner. "Optimization and Parallelization of Ptychography Reconstruction Code". *NIK: Norsk Informatikkonferanse 2012*
2. Smistad, Erik; Elster, Anne C.; Lindseth, Frank. "GPU-Based Airway Segmentation and Centerline Extraction for Image Guided Bronchoscopy". *NIK: Norsk Informatikkonferanse 2012*
3. Smistad, Erik; Elster, Anne C.; Lindseth, Frank. "Real-Time Surface Extraction and Visualization of Medical Images using OpenCL and GPUs". *NIK: Norsk Informatikkonferanse 2012*
4. Smistad, Erik; Elster, Anne C.; Lindseth, Frank. Real-time gradient vector flow on GPUs using OpenCL. *Journal of Real-Time Image Processing 2012*
5. Martinez-del-Amor, Miguel; Karlin, Ian; Jensen, Rune Erlend; Perez-Jimenez, Mario J.; Elster, Anne C.. "Parallel Simulation of Probabilistic P Systems on Multicore Platform".. I: *Tenth Brainstorming Week on Membrane Computing, Vol. II*. Sevilla, Spain: Fénix Editora 2012 ISBN 978-84-940056-6-4. p. 17-26
6. Miguel Ángel Martínez Del Amor, Ignacio Pérez Hurtado, Adolfo Gastalver Rubio, Anne C. Elster and Mario De Jesús Pérez Jiménez: "Simulation of Population Dynamics P systems on CUDA", Accepted for presentation and publications at CMSB 2012

2011

7. Rune E. Jensen, Anne C. Elster and Ian Karlin: "Auto-tuning a Symmetric Rank Two Update for High Performance", accepted for presentation and publication at NIK 2011, Tromsø, Norway, November, 2011.
8. Jan C. Meyer and Anne C. Elster: Optimized Barriers for Heterogeneous Systems Using MPI, IPDPS 2011 , 25th IEEE International Parallel & Distributed Processing Symposium, HCW 2011, 20th International Heterogeneity in Computing Workshop, May 16, 2011, Anchorage, Alaska, USA. HCW is one of the most competitive and prestigious workshops at IPDPS and more competitive than many conferences and journals. It allows for 14-page papers incl. bios. Print ISBN: 978-1-61284-425-1 DOI : 10.1109/IPDPS.2011.124, pp 20-33. (PDF for Personal Use Only)
9. Ahmed A. Aqrabi and Anne C. Elster, "Bandwidth Reduction Through Multithreaded Compression of Seismic Images", IPDPS 2011 , 25th IEEE International Parallel & Distributed Processing Symposium, MTAAP 2011, Workshop on Multithreaded Architectures and Applications, May 20, 2011, Anchorage, Alaska, USA. Print ISBN: 978-1-61284-425-1, DOI 10.1109/IPDPS.2011.330, pp 1730-1739 (PDF for Personal Use Only).
10. Erik Smistad, Anne C. Elster and Frank Lindseth (all NTNU), "Fast Surface Extraction and Visualization of Medical Images using OpenCL and GPUs" at Joint Workshop on High Performance and Distributed Computing for Medical Imaging, MICCAI 2011.
11. Øystein Krog and Anne C. Elster, "Fast GPU-based Fluid Simulations Using SPH" presented at EuroGPU at PARA 2010 PARA'10, Proceedings of the 10th international conference on Applied Parallel and Scientific Computing - Volume 2 Pages 98-109 Springer-Verlag Berlin, Heidelberg ©2012 [table of contents](#)
ISBN: 978-3-642-28144-0 doi [10.1007/978-3-642-28145-7_10](https://doi.org/10.1007/978-3-642-28145-7_10) (Pre-print for personal use)

2010 and later

12. Thorvald Natvig, Anne C. Elster and Jan Christian Meyer: "Automatic Run-Time Parallelization and Transformation of I/O" accepted as regular paper at SC'10 (ca 20% acceptance rate, and the most prestigious in my area of research), DOI: 10.1109/SC.2010.11 (PDF for Personal Use Only).
13. Thorvald Natvig and Anne C. Elster: "Run-Time Analysis and Instrumentation for Communication Overlap Potential" , in Recent Advances in the Message Passing Interface, Lecture Notes in Computer Science, 2010, Volume 6305/2010, pp42-49, DOI: 10.1007/978-3-642-15646-5_5. Presented at: EuroMPI 2010 , Stuttgart, Germany, Sept 12-15, 2010. Link to abstract and Springer's on-line version. (PDF for Personal Use Only).
14. Jose Luis Vázquez-Poletti (UCM Barcelona. Spain) and Jan Perhac, John Ryan, Anne C Elster (all NTNU): "THOR: A Transparent Heterogeneous Open Resource Framework", IEEE Cluster 2010, Workshop, Sep 20-24, 2010, Heraklion, Crete, Greece. Print ISBN: 978-1-4244-8395-2 DOI: 10.1109/CLUSTERWKSP.2010.5613099 (PDF for Personal Use Only)
15. Thorvald Natvig and Anne C. Elster (both NTNU): "Run-time Optimization of Sends, Receives and File I/O" Print IEEE Cluster 2010, Workshop, Sep 20-24, 2010, Heraklion, Crete, Greece. Print ISBN: 978-1-4244-8395-2 INSPEC Accession Number: 11623603 DOI : 10.1109/CLUSTERWKSP.2010.5613104, (PDF for Personal Use).
16. Jan Christian Meyer (PhD student) and Anne C. Elster (advisor), "Performance Modeling of Heterogeneous Systems" , PhD Forum, IEEE IPDPS 2010, Atlanta, GA, USA. (PDF for

personal use)

17. Holger Ludvigsen and Anne Elster: Real-Time Ray Tracing Using NVIDIA OptiX presented and published at EuroGraphics in Norrköping, May 3-7, 2010. (PDF for personal use)
18. Anne C. Elster (NTNU) and Stephane Requena (Genci, Paris): "Parallel Computing on GPUs", in Parallel Computing: From Multicores and GPU's to Petascale , Volume 19 Advances in Parallel Computing, Edited by: B. Chapman, F. Desprez, G.R. Joubert, A. Lichnewsky, F. Peters and T. Priol, April 2010, pp 533-535., hardcover, ISBN: 978-1-60750-529-7 This paper is a short introduction to GPU and the EuroGPU 2009 minisymposium we organized at ParCo 2009, Sept. 1-2, 2009, Lyon, France. Online abstract at IOPress (Pre-print PDF for personal use)
19. Eirik Aksnes and Anne C. Elster (both NTNU): "Porus Rock Simulations and Lattice Boltzmann on GPUs", in Parallel Computing: From Multicores and GPU's to Petascale , Volume 19 Advances in Parallel Computing, Edited by: B. Chapman, F. Desprez, G.R. Joubert, A. Lichnewsky, F. Peters and T. Priol, April 2010, pp 533-535, hardcover, ISBN: 978-1-60750-529-7 This paper was Presented at EuroGPU 2009 at ParCo 2009, Sept. 1-2, 2009, Lyon, France. It looks at using the Lattice Boltzman Method on large 3D datasets on GPUs for fluid simulations. Online abstract at IOPress (Pre-print PDF for personal use)
20. Daniele G. Spampinato, Anne C. Elster and Thorvald Natvig (all NTNU, Norway): "Modeling Multi-GPU Systems" in Parallel Computing: From Multicores and GPU's to Petascale , Volume 19 Advances in Parallel Computing, Edited by: B. Chapman, F. Desprez, G. R. Joubert, A. Lichnewsky, F. Peters and T. Priol, April 2010, pp 562-569, hardcover, ISBN: 978-1-60750-529-7 This paper was Presented at EuroGPU 2009 at ParCo 2009, Sept. 1-2, 2009, Lyon, France. On-line abstract at IOPress (PDF for personal use)
21. Rune Hovland and Anne C. Elster: "Throughput Computing on Future GPUs" in Parallel Computing: From Multicores and GPU's to Petascale , Volume 19 Advances in Parallel Computing, Edited by: B. Chapman, F. Desprez, G. R. Joubert, A. Lichnewsky, F. Peters and T. Priol, April 2010, pp 570-577, hardcover, ISBN: 978-1-60750-529-7 This paper was Presented at EuroGPU 2009 at ParCo 2009, Sept. 1-2, 2009, Lyon, France. Online abstract at IOPress (PDF for personal use)
22. Anne C. Elster, "GPU Computing and Future Programming Environments", to be presented at ParCo 2009 in MS EuroGPU, Sep 1-2, Lyon, France. In preparation for review for associated proceedings.
23. Anne C. Elster, Thorvald Natvig, and Daniele Giuseppe Spampinato, "Modeling Communication on Modern GPU Systems", to be presented at ParCo 2009 in MS EuroGPU, Sep 1-2, Lyon, France. In preparation for review for associated proceedings.
24. Leif Christian Larsen (Schlumberger, Norway) and Anne C. Elster(NTNU), "Parallel Voxelization Algorithms", to be presented at ParCo 2009 in MS EuroGPU, Sep 1-2, Lyon, France. In preparation for review for associated proceedings.
25. Eirik Aksnes and Anne C. Elster (both NTNU), "Lattice Boltzman and Porous Rocks on Modern GPUs"
26. Anne C. Elster, "Real-Time Parallel Computing Using GPUs", presented at PPAM 2009 (see Invited Talks) to be expanded into longer paper.
27. Atle Rudshaug and Anne C. Elster, " Optimizing and Parallelizing a Large Commercial Code for Modeling Oil-well Networks", accepted for presentation at SIMS 50 - Modelling and Simulation of Energy Technology: The 50th Conference on Simulation and Modelling, Oct. 7-8, Frederica, Denmark.
<http://www.dksim.dk/sims50/>

28. Jan C. Meyer and Anne C. Elster, "Latency-Aware Barrier Synchronization", submitted poster. In process of being expanded into paper.
29. Anne C. Elster and Owe Johansen (both NTNU) "Experiences with Fault Tolerance for Large Parallel Seismic Applications", in review.
30. Anne C. Elster and Jan Christian Meyer (both NTNU), "A Super-Efficient Adaptable Bit-Reversal Algorithm for Multithreaded Architectures". in Proceedings of 23rd IEEE International Parallel and Distributed Processing Symposium (IPDPS 2009), presented at Workshop on Multi-Threaded Architectures and Applications (MTAAP'09) (Abstracts at: http://www.ipdps.org/ipdps2009/Abstracts_2009.pdf to be published at MTAAP'09 as part of IEEE IPDPS 2009.
31. Daniele Spampinato and Anne C. Elster (both NTNU): "Linear Optimization on Modern GPUs" in Proceedings of 23rd IEEE International Parallel and Distributed Processing Symposium (IPDPS 2009), presented at Workshop on Multi-Threaded Architectures and Applications (MTAAP'09) . Abstracts at: http://www.ipdps.org/ipdps2009/Abstracts_2009.pdf
32. Jan Christian Meyer and Anne C. Elster: "The BSP Model and Heterogeneous Systems", PARA'08, Trondheim, Norway, May 13-16, 2008. To be published in Springer LNCS 2009.
33. Thorvald Natvig and Anne C. Elster: "Using Context-Sensitive Transmission Statistics to Predict Transmission Time" PARA'08, Trondheim, Norway, May 13-16, 2008. To be published in Springer LNCS 2009.
34. Jan C. Meyer and Anne C. Elster (both NTNU), "Latency Impact on Spin-Lock Algorithms for Modern Shared Memory Multiprocessors" in journal *Scalable Computing Practice and Experience* 2008; Vol. 9, No. 3, pp 197-206. (Enhanced version of MuCoCos'08 paper.)
35. Jan C. Meyer and Anne C. Elster (both NTNU), "Latency Impact on Spin-Lock Algorithms" 2008 International Workshop on Multi-Core Computing Systems (MuCoCos'08) in conjunction with CISIS'08. link to abstract , at
36. Anne C. Elster and Otto Anshus: "HPC Environments -- Visualization and Parallelization Tools: Minisymposium Abstract", PARA'06 and Lecture Notes in Computer Science 2007; Volum 4699. p 177
37. Jan C. Meyer and Anne C. Elster (both NTNU), "A Load Balancing Strategy for Computations on Large, Read-only Data Sets", PARA'06, Umeå, Sweden, June 2006, and Lecture Notes in Computer Science 2007; Volum 4699, pp 198-207.
38. Thorvald Natvig & Anne C. Elster (both NTNU) "Automatic and Transparent Optimization of an Application's MPI Communication", PARA'06, Umeå, Sweden, June 2006, and published in LNCS 4699, pp 208-217, Springer-Verlag, 2007.
39. Ingar Saltvik, Anne C. Elster and Henrik R. Nagel (all NTNU) "Parallel Visualization of Snow", PARA'06, Umeå, Sweden, June 2006. Published in LNCS 4699, pp 218-217, Springer-Verlag, 2007.
40. **NOTE: Elster was on maternity leave in 2005.**
41. Einar R. Rosenvinge, Anne C. Elster and Cyril Banino, (all NTNU) "Experiments with Scheduling Strategies for Data-Parallel MPI Applications on Clusters", PARA 2004, Lyngby, Denmark, June 20-23, 2004. Published in LNCS 3732, pp 1141-1150, Springer-Verlag, 2006. Abstract at: http://www2.imm.dtu.dk/~jw/para04/Abstracts/anne_c_elster/anne_c_elster.html
42. Otto Anshus, Anne C. Elster and Brian Vinter, "Cluster Computing as a Teaching Tool", in Mini Symposium "Cluster Computing", ParCo 2003, Dresden , Germany, September 2-5, 2003. Published in G.R. Joubert et al. (Eds.), *Parallel Computing: Software Technology, Algorithms,*

Architectures and Applications, pp 887-894, Elsevier, 2004.

43. Torbjørn Vik, Anne C. Elster and Torbjørn Hallgren, "Real-time Simulation of Smoke through Parallelizations", ParCo 2003, Dresden, Germany, September 2-5, 2003. Published in G.R. Joubert et al. (Eds.), *Parallel Computing: Software Technology, Algorithms, Architectures and Applications*, pp 371-378, Elsevier, 2004.
44. Anne C. Elster, "The Next Level of Simulations: Extreme Computing", SIMS 2002 (43rd Conference on Simulation and Modelling), Oulu, Finland, September 26-27, 2002. http://ntsat.oulu.fi/Tapahtumat/SIMS_CallForPapers/Session2.htm Paper also available at: link.
45. Anne C. Elster, "High-Performance Computing: Past, Present and Future", PARA 2002, Espoo, Finland, June 15-18, 2002. Published in J. Fagerholm et al. (Eds.): PARA 2002, LNCS 2367, pp 433-444, 2002, Springer Verlag. <http://www.csc.fi/para2002/program.phtml> Paper available at: link (Springer Verlag has promised to fix the current problem with their link to the PDF file. In the meantime, you may access the paper for personal use at: PDF-file
46. Paul Sack and Anne C. Elster, "Fast MPI Broadcasts Through Reliable Multicasting", PARA 2002, Espoo, Finland, June 15-18, 2002. <http://www.csc.fi/para2002/program.phtml> Publish in J. Fagerholm et al. (Eds.), PARA 2002, LNCS 2367, pp 445-453, Springer-Verlag. Paper available at: link.
47. Anne C. Elster and Lloyd D. Clark, "Optimized FFTs for ADSL", Proceedings of the NORSIG 2001 Symposium, Oct. 18-19, 2001, Trondheim, Norway. Available in PostScript off the Program webpage at <http://www.norsig.no/norsig2001>
48. Robert Strandh (Univ. of Bordeaux) and Anne C. Elster, "Fast Recursive Bit Reversal: Shuffling N Elements in Less Than 5N Cycles with No Special Hardware", in revision
49. David R. Kincaid and Anne C. Elster, "Iterative Methods Symposium Honors Dr. David M. Young, Jr.", *IEEE Computational Science & Engineering*, pp 12-15, Dec. 1998.
50. Anne C. Elster and David L. Presberg, "Setting Standards For Parallel Computing: The High Performance Fortran and Message Passing Interface Efforts", Theory Center *SMART NODE Newsletter*, May, 1993, Vol.5, No. 3, Cornell University. Accessible on WWW at: <http://www.tc.cornell.edu/Parallel.Tools/articles/HPF.and.MPI.html>
51. Joseph R. Cavallaro (Rice University) and Anne C. Elster, "A CORDIC Processor Array for the SVD of a Complex Matrix", Proc. of the 2nd Intern'l Workshop on SVD and Signal Processing, pp 66-73, Kingston, RI, June 25-27, 1990. [Later revised into BOOK CHAPTER in *SVD and Signal Processing, II: Algorithms, Analysis and Applications*, Ed. R. J. Vaccaro, Elsevier, 1991, pp 227-239.]
52. Anne C. Elster, "Basic Matrix Subprograms for Distributed Memory Systems", Proc. of the Fifth Distributed Memory Computing Conf. (DMCC5), in Charleston, SC, April 9-12, 1990, Ed. D. W. Walker and Q. Stout, IEEE Computer Society Press, pp 311-316. Received STUDENT PAPER COMPETITION AWARD. Citation: link.
53. Anne C. Elster, M Ümit Uyar (Bell Labs), and Anthony P. Reeves, "Fault Tolerant Matrix Operations on Hypercube Computers", Proc. of the 1989 International Conf. on Parallel Processing, St. Charles, IL, August 8-12, 1989, Ed. F. Ris and P. M. Kogge, Penn State, Vol. III, pp 169-176.
54. Anne C. Elster and Hungwen Li (IBM Research), "Hypercube Algorithms on the Polymorphic Torus", Proc. of the Fourth Conference on Hypercube, Concurrent Computers, and Applications, March 6-8, 1989 in Monterey, CA, Vol. I, Golden Gate Enterprises, pp 309-316. This paper was based on Cornell Computer Science TR 89-1003 and IBM Research Report, RJ 6775, 1989 (same title and authors).

55. Anne C. Elster, "Fast Bit-Reversal Algorithms", Proc. of the IEEE 1989 International Conference on Acoustics, Speech, and Signal Processing, Glasgow, Scotland, May 23-26, 1989, Vol. 2, pp 1099-1102. Paper originally sent to Conf. on Vector and Parallel Computing, Tromsø, Norway, June 6-10, 1988 where it received HONORABLE MENTION, but was later withdrawn due to timing and funding.
56. Anne C. Elster and A.P. Reeves, "Block-Matrix Operations Using Orthogonal Trees", Proc. of the Third Conf. on Hypercube Systems and Applications, January 19-20, 1988 in Pasadena, CA, Ed. G. Fox, ACM, pp 1554-1561.

REVIEWED CONFERENCE ABSTRACTS AND POSTERS

1. Anne C. Elster – to give two talks at GTC 2013, San Jose, USA, March 2013 (abstracts accepted)
2. Smistad, Erik; Elster, Anne C.; Lindseth, Frank.
Airway Tree Segmentation and Centerline Extraction for Image Guided Bronchoscopy. 4th National PhD Conference in Medical Imaging 2012; 2012-11-28 - 2024-11-29
NTNU
3. Anne C. Elster(NTNU) and Stephane Requena (GENCI, France), "EuroGPU", Two-day Minisymposium on GPU Computing at ParCo 2009, Lyon, France, September 1-2. 2009.
4. Eirik Ola Aksnes and Anne C. Elster (both NTNU), "Fluid Dynamics of Porous Rocks on Modern GPUs", The Eighth Annual Meeting on High Performance Computing and Infrastructure in Norway (NOTUR 2009), May 18-20, 2009, Trondheim, Norway.
<http://www.notur.no/notur2009/programme.html>
5. Daniel Haugen and Anne C. Elster (both NTNU), "Strategies for Handling Large Amounts of Data from Storage to GPUs", The Eighth Annual Meeting on High Performance Computing and Infrastructure in Norway (NOTUR 2009), May 18-20, 2009, Trondheim, Norway.
<http://www.notur.no/notur2009/programme.html>
6. Rune Johan Hovland, Anne C. Elster and Magnus Lie Hetland (all NTNU), "High Data Volumes and Streaming on Future GPU Systems", The Eighth Annual Meeting on High Performance Computing and Infrastructure in Norway (NOTUR 2009), May 18-20, 2009, Trondheim, Norway.
<http://www.notur.no/notur2009/programme.html>
7. Åsmund Herikstad and Anne Elster (both NTNU), "Parallel Techniques for Estimation and Correction of Aberration on Medical Ultrasound Imaging" The Eighth Annual Meeting on High Performance Computing and Infrastructure in Norway (NOTUR 2009), May 18-20, 2009, Trondheim, Norway.
<http://www.notur.no/notur2009/programme.html>
8. Jan C. Meyer and Anne C. Elster (both NTNU), "Modelling Overlapping Communication and Computation", The Eighth Annual Meeting on High Performance Computing and Infrastructure in Norway (NOTUR 2009), May 18-20, 2009, Trondheim, Norway.
<http://www.notur.no/notur2009/programme.html>
9. Daniele G. Spampinato and Anne Elster (both NTNU), "Communication Challenges on Multi-GPU Systems", The Eighth Annual Meeting on High Performance Computing and Infrastructure in Norway (NOTUR 2009), May 18-20, 2009, Trondheim, Norway.
<http://www.notur.no/notur2009/programme.html>

10. Enrique S. Quintana-Orti, Jose R. Herrero and Anne C. Elster, "Scientific Computing on GPUs", Minisymposium, PARA 2008, Trondheim, Norway, May 2008.
Link to the 12 talks.
11. Robin Eidissen and Anne C. Elster: "Comparing Cg and CUDA Implementations of Selected Transform Algorithms". SC'08, Austin, Texas, USA, Nov 15-21 (less than 30% acceptance rate!)
12. Atle Rudshaug and Anne C. Elster: "Analysing and Optimizing an Oil Well Network Code for Today's Parallel Architectures", poster, NOTUR 2008, Tromsø, Norway, June 4-5, 2008.
13. Rune Erlend Jensen and Anne C. Elster: "GCC 4.x Issues", poster, NOTUR 2008, Tromsø, Norway, June 4-5, 2008.
14. Leif Christian Larsen, Anne C. Elster, and Tor Fevang (Schlumberger) "Speeding Up Transform Algorithms for Image Compression Using GPUs", Student poster, Stanford 50: State of the Art and Future Directions of Computational Mathematics and Numerical Computing, March 29-31, 2007 Abstract
15. Anne C. Elster, "HPC Environments: Visualization and Parallelization Tools", Minisymposium, PARA 2006, Umeå, Sweden, June 2006. Part 2 (MS 16)
16. Anne C. Elster, "HPC Environments: A Quick Overview", PARA 2006, Umeå, Sweden, June 2006
17. Anne C. Elster, Glenn Hisdal, Andreas Braathen, Håvard Bjerke, Rune Andresen (NTNU) & Sverre Jarp (CERN), "NTNU at CERN: Grid-Enabling Tools Using SmartFrog, Lemon and Virtualization", PARA 2006, Umeå, Sweden, June 2006
18. Jan.C. Meyer and Anne C. Elster (both NTNU), "A Load Balancing Strategy for Computations on Large, Read-only Data Sets", PARA'06, Umeå, Sweden, June 2006. Extended abstract Extended version to be published in Springer Verlag's LNCS-Series (see reviewed articles).
19. Thorvald Natvig & Anne C. Elster (both NTNU) "Automatic and Transparent Optimization of an Application's MPI Communication", PARA'06, Umeå, Sweden, June 2006. Extended abstract Extended version to be published in Springer Verlag's LNCS-Series (see reviewed articles).
20. Ingar Saltvik, Anne C. Elster and Henrik R. Nagel (all NTNU) "Parallel Visualization of Snow", PARA'06, Umeå, Sweden, June 2006. Extended abstract Extended version to be published in Springer Verlag's LNCS-Series (see reviewed articles).
21. Åsmund Østvold (SCALI), Anne C. Elster and Håkon Bugge (SCALI), "How Measurement Methods Affect Timing of MPI Collective Late Change Operations", PARA'06, Umeå, Sweden, June 18-21, 2006. (extended abstract)
22. Øystein Borg, Anne C. Elster and Håkon Bugge, "Dynamic Selection of MPI Intra-copy Routines Based on Program Characteristics", Poster received honorable mention at the NOTUR 2006 Conference, Bergen, Norway, May 11-12, 2006.
23. Rune Johan Andresen, Sverre Jarp and Anne C. Elster, "HPC File Server Monitoring and Tuning Using a Database" , in collaborations with CERN, NOTUR 2005 poster, NTNU, Trondheim, Norway, May 30-31, 2005.
<http://www.notur.no/notur2005/andresen.pdf>
24. Håvard Bjerke, Sverre Jarp and Anne C. Elster, "HPC Virtual Machine Monitor: Xen for the IA-64 Architecture" in collaboration with CERN, NOTUR 2005 poster, NTNU, Trondheim, Norway, May 30-31, 2005.

- <http://www.notur.no/notur2005/Bjerke.pdf>
25. Andreas Braathen, Glenn Hisdal and Anne C. Elster, "Two Cluster Projects at CERN: Automatic Software Installation Using SmartFrog and Surveillance of Cluster Nodes Using Lemon", in collaborations with CERN, NOTUR 2005 poster, NTNU, Trondheim, Norway, May 30-31, 2005.
<http://www.notur.no/notur2005/braathen.pdf>
 26. Jan Christian Meyer and Anne C. Elster, "Load Balancing Visualisation Server Clusters" , in collaboration with Schlumberger Voxel Vision, NOTUR 2005 poster, NTNU, Trondheim, Norway, May 30-31, 2005.
<http://www.notur.no/notur2005/Meyer.pdf>
 27. Thorvald Natvig and Anne C. Elster, "Simplified Mesh Genration Through Rendering" , NOTUR 2005 poster, NTNU, Trondheim, Norway, May 30-31, 2005.
<http://www.notur.no/notur2005/Natvig.pdf>
 28. Snorre Boasson and Anne C. Elster, "Parallel I/O Strategies", NOTUR 2004 poster, Tromsø, Norway, June 10-11, 2004
 29. Trond Kandal, Frode Nilsen and Anne C. Elster, "Experiences with Architectures for Grid Portals", NOTUR 2004 poster, Tromsø, Norway, June 10-11, 2004
http://www.notur.org/notur2004/poster_fn.pdf>
 30. Tor Arvid Lund, Morten Rodal and Anne C. Elster, "Porting Shared memory Applications to a Distributed Memory Architecture" NOTUR 2004 poster, Tromsø, Norway, June 10-11, 2004
http://www.notur.org/notur2004/poster_lund_rodal.pdf
 31. Anne C. Elster and Robin Holtet, "Benchmarking Clusters vs. SMP Systems by Analyzing the Trade-Off Between Extra Calculations vs. Communication", SC 2003, Phoenix, Arizona, November 18, 2003. Abstract link:
http://www.sc-conference.org/sc2003/inter_cal/inter_cal_detail.php?eventid=10790#19
(Only 30% acceptance rate!)
 32. Anne C. Elster, Otto J. Anshus, Cyril Banino and Amund Tveit, "Recent Trends in Cluster Computing", in Mini Symposium "Cluster Computing", ParCo 2003, Dresden , Germany, September 2-5, 2003.
 33. Anne C. Elster et. al., NOTUR 2003 stand on "Cluster Technologies", Oslo, Norway, May 14-15, 2003
 34. Anne C. Elster and Kristin S. Karlsen., "Recruting, Mentoring and Networking Women in Computing", Grace Hopper Conference (GHC 2002) in Vancouver, Canada, Oct 9-11, 2002. Program description (no longer on-ine :-(-):
 35. Anne C. Elster and Lloyd D. Clark, "Optimizing ADSL/VDSL Algorithms" 2001 SIAM Annual Meeting in San Diego, July 9-13, 2001
<http://www.siam.org/confpart/showmin.cfm?SESSIONCODE=897>
 36. Anne C. Elster, "Developing and Testing New Parallel Iterative Methods Using PETSc", Tenth SIAM Conference and Parallel Processing for Scientific Computing, March 12-14, 2001, Portsmouth, Va. <http://www.siam.org/confpart/showmin.cfm?SESSIONCODE=231>
 37. Robert Strandh and Anne C. Elster, "A Very Fast Recursive Bit-Reversal Algorithm", SIAM CSE'00: First SIAM Conference on Computational Science and Engineering, Washington, D.C., Sep 21-24, 2000. <http://www.siam.org/meetings/cse00/cp12.htm>>
 38. Anne C. Elster and C. Liang, "Developing and Testing Linear Solvers Using PETSc", SIAM CSE'00: First SIAM Conference on Computational Science and Engineering, Washington,

- D.C., Sep 21-24, 2000. <http://www.siam.org/meetings/cse00/cp25.htm>
39. Anne C. Elster, "Software Environment for Analyzing and Testing Large Parallel Scientific Codes", SciTools'98, Oslo, Norway, Sept 14-16, 1998. REVIEWED abstract at: <http://www.oslo.sintef.no/SciTools98/WebAbstracts/elster-abs.html>
 40. Anne C. Elster, "Parallel Infrastructures for Particle-in-Cell Codes". Parallel Infrastructures for Applications, workshop at the Univ. of Texas at Austin, Austin, TX, April 24, 1996. Schedule at: <http://www.cs.utexas.edu/users/rvdg/workshop.sched2.html>
 41. Anne C. Elster, Niels Otani, Niels (Cornell, now Case Western) and John G. Shaw (XEROX Research Center), "Parallelization Issues for Particle-in-Cell Codes", Supercomputing'94, Nov. 14-18, 1994. REVIEWED abstract of poster presentation at: http://www.computer.org/conferen/sc94/posters/elster_a.html
 42. Joe R. Cavallaro (Rice Univ.), Anne C. Elster, and Ian Walker (Rice Univ.) "A Parallel VLSI Architecture for Robot Motion Computations", SIAM Annual Meeting, July 16-20, 1990, Chicago, IL.
 43. Anne C. Elster, "Developing Level-3 BLAS for Distributed Memory Systems", The Eighth Army Conf. on Applied Math. and Computing, Ithaca, NY, June 19-22, 1990.

POSITION PAPERS, TECHNICAL REPORTS AND SELECTED OTHER WRITTEN PUBLICATIONS:

1. Anne C. Elster, "HPC: Simulating Oil Fields, the Weather and Other Complex Systems" part of presentation of The Norwegian University of Science and Technology (NTNU) - research & development & education, *Information & Communication Technology: Technology through Life*, Norway Exports, p 47, Annual 49, 2006/2007
2. Nils Magnus Larsgård and Anne C. Elster, "Performance of Njord vs. Embla", Research display poster, Opening Seminar of the new supercomputer, Njord, at NTNU, Nov. 30, 2006.
3. Leif Christian Larsen and Anne C. Elster, "Compression of Image Data on Clusters Using GPUs and Quad-Core CPUs", Research display poster, Opening Seminar of the new supercomputer, Njord, at NTNU, Nov. 30, 2006.
4. Kjetil Nørvåg, Kjell Bratbergsengen, Haakon Dybdahl, Anne C. Elster, Torbjørn Hallgren, Morten Hartmann, Jon Olav Hauglid, and Lasse Natvig: Position Paper on Computer Systems, in *InfoSam2020: The Information Society of 2020 -an exercise in planning for the future*, Arne Sølvberg (Editor), pp 41-47. Originally presented at INFOSAM 2020, April 19-20, 2004, NTNU, Trondheim (co-hosted by NTNU and The Norwegian Board of Technology (Teknologirådet).
5. Helge I. Andersson, Finn Drabløs, Helge Drange, Anne C. Elster, Henning Omre, Bjørnar Pettersen and Einar Rønquist (Listed in index as Anne C. Elster, Einar Rønquist et. al): Position Paper on Computational Science, in *InfoSam2020: The Information Society of 2020 -an exercise in planning for the future*, Arne Sølvberg (Editor), pp 91-96. Originally presented at INFOSAM 2020, April 19-20, 2004, NTNU, Trondheim (co-hosted by NTNU and The Norwegian Board of Technology (Teknologirådet).
6. Knut Børve, Anne C. Elster, Risto Nieminen, Roar Skålin and Lina von Sydow: "The Future of High-Performance Computing in Norway", by *Komité for tugnregneprogrammet III (HPC Program III Committee)* Research Council of Norway (RCN/NFR), January 26, 2004.
7. Anne C. Elster, "Academic Women in EECS Web Page/Database", ongoing document listing tenured and tenure-track women in Computing. The document gets updated regularly

and can currently be found at: <http://www.idi.ntnu.no/~elster/doc/women-eecs.html>

8. Anne C. Elster, "Using ITPACK 2C on the UT Austin Math Sun Machines", Nov. 1998, CNA, Univ. of Texas at Austin. Included as course notes for Dr. David M. Young's graduate class on Diff. Eqn. and to be included on the ITPACK web pages at <http://rene.ma.utexas.edu/CNA/ITPACK/>
9. Robert Strandh and Anne C. Elster, "A Very Efficient Linear-time, Logarithmic-space Bit Reversal Algorithm", Center for Numerical Analysis, TR no. CNA-288, The University of Texas at Austin, October 1998. (A shorter version of this report is being submitted as a reviewed journal publication.) A PDF file of this report is available at: <http://rene.ma.utexas.edu/CNA/cna-reports.html> Note that the report starts on page 2.
10. David R. Kincaid and Anne C. Elster, Symposium on Iterative Methods in Scientific Computation . Report CNA-287, Center for Numerical Analysis, University of Texas at Austin, October 1998. <http://rene.ma.utexas.edu/CNA/cna-reports.html>
11. Anne C. Elster, On-line course notes for CS 328, a level CS7 class on Advanced Data Types in C++ taught at the Univ. of Texas at Austin, Summer 1998: <http://www.cs.utexas.edu/user/elster/cs328-su98>
12. Anne C. Elster, On-line course notes for CS 315, a level CS2 class on Data Structures and C++ taught at the Univ. of Texas at Austin, Summer 1997: <http://www.cs.utexas.edu/user/elster/cs315.html>
13. MPI Forum Members (incl. Anne C Elster): "MPI-2: Extensions to the Message-Passing Interface", (MPI 2 Standards document) July 18, 1997 (HTML Sept 2001).
14. Anne C. Elster, "User's Guide -- FMM Code", documentation on how to use the Fast Multipole Method code used at TICAM, The Univ. of Texas at Austin, May 16, 1997.
15. Anne C. Elster, Design notes and and User's guide for the payphone-network interactions simulator we developed using DES (Discrete Event Simulation). Internal documents, Schlumberger Austin Research Center, 1996.
16. Anne C. Elster, SWIFT documentation describing design, configuration and use of the Schlumberger World-wide Issue Tracking system, a distributed database based on SYBASE/SCOPUS. Internal documents, Schlumberger APC, 1995 and 1996.
17. Anne C. Elster, SMS documentation describing the structure of SMS, the Schlumberger Software configuration Management System. Internal documents, Schlumberger APC, Fall 1994.
18. Anne C. Elster, "Parallelization Issues and Particle-in-Cell Codes", Ph.D. dissertation, Cornell University, August 1994. Abstract at: <http://www.englib.cornell.edu/thesesabstracts/August94/elster.html>
19. Anne C. Elster, "MPI_LOAD_INFO ", Proposal presented to the MPI Committee in Dallas, Texas, May 12, 1993.
20. This proposal encouraged adding dynamic process features to MPI. Although this proposal did not make it into the MPI-1 standard, it was one of the motivators for process control in MPI-2.
21. Anne C. Elster and Palghat S. Ramesh (XEROX, DRI) "Simulation of Charge Transport Using Parallel BLAS on the Intel Hypercube", Xerox Internal Report X9200084, Webster Research Center, NY, April 1992.
22. Anne C. Elster, "Efficient Parallel Algorithms for Matrix Operations", Master of Science Thesis, Cornell University, Aug. 1988.

23. Joseph R. Cavallaro (Rice University) and Anne C. Elster, "Complex Matrix Factorizations with CORDIC Arithmetic", Cornell Computer Science TR 89-1071.
24. Key ideas presented at The Conference on Approximation Theory and Numerical Linear Algebra, Kent State Univ., Kent, OH, March 30-31, 1989.
25. Joseph R. Cavallaro (Rice University) and Anne C. Elster, "A CORDIC Processor Array for the SVD of a Complex Matrix", Proc. of the 2nd Intern'l Workshop on SVD and Signal Processing, pp 66-73, Kingston, RI, June 25-27, 1990. Later revision appeared as BOOK ARTICLE (see reviewed pubs).
26. Revision of same title in Proc. of the 2nd Intern'l Workshop on SVD and Signal Processing, pp 66-73, Kingston, RI, June 25-27, 1990.
27. Anne C. Elster and Hungwen Li (IBM Research), "Hypercube Algorithms on the Polymorphic Torus", Cornell Computer Science TR 89-1003 and IBM Research Report, RJ 6775, 1989.
28. This paper was later published in Proc. of the Fourth Conference on Hypercube, Concurrent Computers, and Applications (see reviewed publications).
29. Anne C. Elster, M. Ümit Uyar (Bell Labs), and Anthony P. Reeves, "Fault Tolerant Matrix Multiplication on Hypercube Computers", Cornell University Technical Report EE-CEG 89-2, January 1989.
30. Anne C. Elster, "Porting of the Parallel Pascal Translator from VAX 11/780 to IBM-PC/AT". Master of Engineering Project Report, School of Electrical Engineering, Cornell University, Fall 1986.

SELECTED OTHER PRESENTATIONS AND ABSTRACTS:

1. Anne C. Elster: "Oversikt over bruk, tildeling av regnetid, brukerstøtte" (mostly an overview of NTNU's new Supercomputer Njord) -- Seminar/Press meeting at NTNU, Nov. 30, 2006. Info about Njord at NTNU.
2. Anne C. Elster: "Supercomputing ved NTNU", Introduction talk for Supercomputing Day, Nov. 21, 2006.
3. Anne C. Elster: "NOTUR Emerging Technologies: Cluster Technologies" presented to the Research Council of Norway's international committee reviewing the NOTUR project, May 10, 2004, RCN, Oslo, Norway.
4. Anne C. Elster: "NOTUR Cluster Project Status Presentation: Future Technologies -- Clusters", presented to the NOTUR Board, November 27, 2003, Oslo, Norway.
5. Anne C. Elster: "Cluster Technologies -- Status Report", Research Council of Norway HPC Committee meeting, June 30, 2003, Oslo, Norway.
6. Anne C. Elster: "Research Techniques -- a Personal Perspective", Doctoral seminar, Dept. of Computer & Info Science, NTNU, Trondheim, Norway, March 1, 2001. Listing of colloquia Spring 2001 + links to abstracts etc.
7. Anne C. Elster: Informal talk on my research with R&D group members, Fast Search and Transfer ASA, Porsgrunn, Norway, Feb 9, 2001.
8. Anne C. Elster: "Parallelization Issues and Particle Simulation Codes", and "SWIFT Schlumberger World-wide Issue Filing & Tracking System". In-house seminar, Schlumberger Cambridge Research Center, Cambridge, England, Feb. 1, 1995.
9. Anne C. Elster: "Parallelization Issues and Particle Simulation Codes", Schlumberger Austin Systems Center, in-house seminar, Austin, Texas, May 16, 1994.

10. Anne C. Elster, "Parallelizing C Particle Simulation Codes Using Pthreads", Parallel Computing on the Kendall Square Research KSR1, Workshop, Engineering & Theory Center, Cornell Univ., Ithaca, New York, May 6, 1993.
11. Anne C. Elster: "The Message Passing Interface (MPI) Forum", Cornell Engineering & Theory Center Staff-to-Staff Seminar, Cornell University, Ithaca, New York, Apr. 23, 1993.
12. Anne C. Elster: Part I: "Testing Particle Simulation Codes"; Part II: "KSR1 Overview", Xerox Design Research Institute Seminar, Cornell University, Ithaca, NY, Dec. 8, 1992.
13. Anne C. Elster and Palghat S. Ramesh (XEROX Research), "Simulation of Charge Transport Using Parallel BLAS on the Intel hypercube", Xerox Workshop on Scientific Computation and Modeling, Ithaca, NY, April 22, 1992.
14. Anne C. Elster, "C vs. Fortran in Parallel Scientific Computing", The Eighth Parallel CIRCUS, University of Toronto, Canada, Oct. 26-27, 1990.
15. Joseph R. Cavallaro, Ian D. Walker, I.D.(Rice Univ.), and Anne C. Elster: "Parallel VLSI Architectures to Increase the Efficiency of Robot Control", The Seventh Parallel CIRCUS, Stanford Univ., CA, March 30-31, 1990.
16. Anne C. Elster, "Orthogonal Matrix Algorithms (`Virtual Transpose")", The Sixth Parallel CIRCUS, Courrant Institute, New York University, New York, NY, Oct. 27-28, 1989.
17. Anne C. Elster, "Some Algorithmic Fault Tolerance Issues", The Fifth Parallel CIRCUS, Rensselaer Polytech. Institute, Troy, NY, Apr. 28-29, 1989.
18. Anne C. Elster, "Some Basic Parallel Numerical Algorithms for the Polymorphic Torus", The Fourth Parallel CIRCUS, Rutgers University, New Brunswick, NJ, Dec. 2-3, 1988.
19. Anne C. Elster, "Fast [O(N)] Bit-Reversal Algorithms", The Second Parallel CIRCUS, (Bi-annual informal conference on parallel algorithms and architectures.) Cornell University, Ithaca, NY, Nov. 20-21, 1987.

Dr. Elster's Dissemination/Media Contributions:

I personally much prefer to work with my students on research projects rather than expose myself to the media. However, as an educator in science and technology, I realize how important it is to reach out to the press to let the rest of the world know about how exciting and interesting our fields are, and how important our work is for everyone.

The following is a collection of recent mass media interviews I have given, and articles I have written, mostly in Norwegian.

Most recent:

- My HPC-lab featured in digi.no Fall 2012 together with NTNUs new supercomputer: <http://www.digi.no/902742/dette-skal-norges-storste-supermaskin-gjore>
- Nettundervisning:
- NTNU paper "Universitetsavisa"'s article "Etterlyser MOOC-interesse fra NTNU", Oct. 12, 2012. <http://www.universitetsavisa.no/campus/article15008.ece>
- **Kronikk** in **Dagbladet** (one of 3 main newspapers in Norway), May 7, 2010, (main debate article contributions that was almost 2-pages in print-verion) "[Forbigått av Kina og Saudi-Arabia](#)" on why and how Norway should invest more in research and infrastructure. Well received and lead to meeting with policy makers.
- Adressa (Trondheim's main newspaper), June 23, 2009 article and phone describing the IBM reward received by two of Dr. Elster's Master students, Eirik Ola Aksnes and Daniele Spampinato. See also NTNU's local news links from June 11 and 22, 2009: <http://www.idi.ntnu.no/news/index.php#n215>
- NTNU paper "Universitetsavisa"'s article "Med kurs for webbens vugge" on May 28, 2009, featuring interview with Elster and two of her Master students who will spend their summer at CERN this year.
- "Spillkort gir superkraft til folket" , published on April 29, 2009 on <http://www.forskning.no> , the on-line research publications by The Norwegian Research Council. The article describes Elster and her HPC-lab's research on using gaming technology (GPUs) as computational devices. The title can be translated into something like: "Gaming (Graphics) Cards Give People Super(computing) Power".
- "CERN: Nordmenn vil ikke reise ut", Universitetsavisa , Feb 6, 2009. Elster is interviewed in the article where CERN hopes for more Norwegians wanting to go to CERN since she has advised several students in collaboration with CERN.
- "GPU Computing is about massive data parallelism", InfoWorld, Jan 22, 2009. The article contains longer quotes from Dr. Elster.
- "Imponerten NVIDIA med snøsimulering" on digi.no, Thursday Dec 4, 2008.
- HPC-Lab Members Robin Eidissen and I were interviewed by the NVIDIA video crew at their SC'08 booth, Nov. 2008. Link
- "Vant topplassering på programmering" on digi.no, Tuesday Oct. 7, 2008. Article describes the NCPC and NEWRC programming contest for wish I am the national faculty sponsor this year.
- "NTNU vil lage de kuleste pc-ene" -- HPC-lab opening article on digi.no, Oct. 29, 2008. This article was also renference on NTNU's main page under *Aktuelt* and can still be seen reference at <http://www.ntnu.no/aktuelt/>
- "NTNU vant topplassering blandt 149 nordiske lag i helgens mesterskap" , digi.no article, Tuesday Oct. 7, 2008.

- Our HPC-Lab was used as a back-drop for a TV story on NTNU, Fast and Microsoft: Midtnytt, Sept 30, 2008 Only our keyboards are from Microsoft (we paid for them), but our custom-built PCs with high-end NVIDIA cards are really cool. ;-) My graduate student, Daniele Spampinato, is also in the clip, working away on CUDA (for using graphics cards as extra compute devices), as is Ola Natvig, IDI student and son of colleague Lasse Natvig.

TV interviews w/ Elster

- Streamed from TV Trøndelag, regional TV station about our new supercomputer, Njord.
- A shorter version of above was on **TV Norges (National channel)** "Bymagasinet", Thursday Nov. 30 around 6:20pm.

A link to the above streamed video was on Dec. 4, 2006 available from NTNU's main home page.

Radio interviews w/ Elster

- NRK Trøndelag -- "live" 11:16- 11:21 Monday Nov 27, 2006 about Njord.
- Kanal 24 (national channel) -- "live" 08:15, Thursday, Nov 30, 2006, about Njord
- NRK P3 (national channel)-- "teaser" interview Dec 1, 2006. May come back to make a longer segment of our "cool" supercomputer monster. ;-)
- NTNU student radio, (FM 104.2), May 2006: Telephone interview and in-line article: "**NTNU kjøper ny datamaskin**" incl. quote by Elster.

National media -- print

- Digi.no, June 8, 2004: "Fire NTNU-studenter til IT-sommerjobb hos CERN: Det er CERNs arbeid med samkjørt datakraft («grid computing») som tiltrekker NTNU-studentene. (Based on similar article in Universitetsavisa (see below))

Articles based on Elster's interview about the Njord Supercomputer with Avisenes nyhetsbyrå (ANB)

(ANB is a Norwegian news agency feeding local newspapers throughout Norway)

- ANB, Nov. 30, 2006: <http://www.siste.no/Innenriks/itmagasinet/article2443080.ece>
- Dagsavisen, Nov. 30, 2006: <http://www.dagsavisen.no/innenriks/article2443080.ece>
- Se og Hør (National bi-weekly), Dec. 2006: <http://www.seher.no/cm/SeHer/1.319890.1164896702>

Adresseavisen -- Trondheim's regional paper sold nationally

- Large article on page 13, Monday Nov.27, 2006, entitled "Nordens Sprekeste Maskin" by Svein Inge Meland (951 98 688, svein.inge.meland@adresseavisen.no) incl. photo of Elster in front of Njord with caption "Kry: Anne Cathrine Elster, daglig leder ved Program for beregningsvitenskap og visualisering, er stolt over den nye superdatamaskinene som kommer i drift 30. November."
- "Dagens Navn" ("Today's Name"), Økonomiseksjonen, Thursday Nov. 30, 2006

Local papers

Articles based on Elster's interview about the Njord Supercomputer with Avisenes nyhetsbyrå (ANB) on Nov. 30, 2006, all published within the following week:

(ANB is a Norwegian news agency feeding local newspapers throughout Norway)

1. Akershus Amtstidene <http://www.amta.no/Innenriks/article2443080.ece>
2. Arbeidets Rett (Røros) http://www.rett.no/Innenriks/data_og_teknologi/article2443080.ece
3. Aura Avis http://www.auraavis.no/Innenriks/data_og_teknologi/article2443080.ece
4. Aust Agder Blad http://www.austagderblad.no/Innenriks/data_og_teknologi/article2443080.ece
5. Avisa Nordhordland (Isdalstø) <http://www.nordhordland.no/Innenriks/article2443080.ece>
6. Avisa Nordland (Bodø) <http://www.an.no/Innenriks/article2443080.ece>
7. Bergensavisen <http://www.ba.no/nyheter/irix/article2443080.ece>
8. Bygdeposten (midt i Buskerud) <http://www.bygdeposten.no/Innenriks/article2443080.ece>
9. Demokraten (Fredrikstad) http://www.demokraten.no/data_og_teknologi/article2443080.ece
10. Finnmark Dagblad http://www.finnmarkdagblad.no/Innenriks/data_og_teknologi/article2443080.ece
11. Finnmarken <http://www.finnmarken.no/Innenriks/article2443080.ece>
12. Firda (Førde) <http://www.firda.no/article2443080.ece>
13. Firdaposten (Flora og Bremanger) <http://www.firdaposten.no/Innenriks/article2443080.ece>
14. Fremover (Narvik) http://www.fremover.no/Innenriks/data_og_teknologi/article2443080.ece
15. Glåmdalen <http://www.glomdalen.no/innenriks/article2443080.ece>
16. Hadeland <http://www.hadeland.net/Innenriks/article2443080.ece>
17. Halden Dagblad <http://www.haldendagblad.no/innenriks/article2443080.ece>
18. Hardanger Folkeblad <http://www.hardanger-folkeblad.no/Innenriks/article2443080.ece>
19. Helgeland Arbeiderblad <http://www.helgeland-arbeiderblad.no/riksnyheter/article2443080.ece>
20. Indre Akershus Blad <http://www.indre.no/Innenriks/article2443080.ece>
21. Jarlsberg (Holmestrand) <http://www.jarlsbergavis.no/Innenriks/article2443080.ece>
22. Lofotposten <http://www.lofotposten.no/Innenriks/article2443080.ece>
23. Moss Dagblad http://www.moss-dagblad.no/Innenriks/data_og_teknologi/article2443080.ece
24. Namdalsavisa http://www.namdalsavisa.no/Innenriks/data_og_teknologi/article2443080.ece
25. Nordlys (Tromsø) <http://www.nordlys.no/nyheter/Innenriks/article2443080.ece>
26. Opdalingen <http://www.opdalingen.no/Innenriks/article2443080.ece?service=print>
27. Oppland Arbeiderblad <http://www.oa.no/article2443080.ece>
28. Porsgrunns Dagblad (PD) <http://www.pd.no/Innenriks/article2443080.ece>
29. Rana Blad (Mo i Rana) http://www.ranablad.no/Innenriks/data_og_teknologi/article2443080.ece
30. Ringerikets Blad <http://www.ringblad.no/aktuelt/article2443080.ece>
31. Rogalands Avis http://www.rogalandsavis.no/nyheter/innenriks/data_og_teknologi/article2443080.ece
32. Romerikes Blad <http://www.rb.no/Innenriks/article2443080.ece>

33. Sarpsborg Arbeiderblad
http://www.sa.no/Innenriks/data_og_teknologi/article2443080.ece
34. Smaalenenes Avis
http://www.smaalenene.no/Innenriks/data_og_teknologi/article2443080.ece
35. Sogn Avis <http://www.sognavis.no/Innenriks/article2443080.ece>
36. Stjørdalens Blad http://www.bladet.no/Innenriks/data_og_teknologi/article2443080.ece
37. TA (tidl. Telemark Arbeiderblad) http://www.ta.no/it___data/article2443080.ece
38. Tidens Krav (Kristiansund paper)
http://www.tk.no/Innenriks/data_og_teknologi/article2443080.ece
39. Tvedestrandposten <http://www.tvedestrandsposten.no/Innenriks/article2443080.ece>
40. Østlandsposten (Larvik)
http://www.op.no/Innenriks/data_og_teknologi/article2443080.ece
41. Øyene (Oslofjorden) <http://www.oyene.no/innenriks/article2443080.ece>

New Supercomputer at NTNU, November 2006:

Our celebration on campus on Nov. 30, 2006, included several short talks on interesting uses of supercomputing.

- General info:
 - Link to some info. about Njord we put out in connection with the opening celebration program (mostly in Norwegian)
 - Opening Celebration Program (PDF) .

Articles in Universitetsavisa (NTNU paper)

About/interviews with Elster:

- Umettelig behov for datakraft (1.12.2006, 13:25) ("Insatiable need for compute power") About Njord, NTNU's new supercomputer, and HPC in general. Includes photo of Elster.
- NTNU danket ut av HiST (05.09.2006) mentions Elster's students at CERN.
- Lars Johan Materstvedt: Om faglig nærhet (09.05.2006) Author quotes one of my previous articles on campus location.
- Fornyet samarbeid mellom NTNU og CERN (4.6.2004, 09:28) Re. Elster's collaboration with CERN, includes photo of her and some of her students.

Articles written by Elster:

- Anne Cathrine Elster: Kvinnefiendtlig samlokalisering (09.05.2006) (Universitetsavisa -- in Norwegian):
The above article was abstracted in: "Anne Cathrine Elster: Kvinnefiendtlig samlokalisering" on **Byggaktuelt online** ,
(<http://www.byggaktuelt.no/content.asp?ContentId=11175>) on-line site for the building industry in Norway
- LESERBREV: Mange farer med ny styringsmodell! (16.1.2003, 21:39)

Dr. Anne C. Elster – Short Biography:

Dr. Anne C. Elster is an Associate Professor of Computer Science (IDI) at the Norwegian Univ. of Science and Technology (NTNU) in Trondheim, Norway where she helped found their Computational Science and Engineering Program and served as Co-Director until Jan. 2007 and again in 2012. She is also a Visiting Scientist at the Univ. of Texas at Austin. She established the IDI/NTNU HPC-Lab and has published and/or given over 150 technical contributions. She is currently one of 4 WG Leaders of EU COST Action IC0805: Open European Network for High Performance Computing on Complex Environments. Dr. Elster organized and hosted PARA 2008 in May 2008, and serves yearly on several Program Committees, including. ACM/IEEE SC, HiPC IEEE IPDPS and ParCo.

Her current research interests are in parallel computing where she is currently focusing her research on developing good models for heterogeneous computing and parallel software environments for testing and developing parallel scientific codes that interact visually with the users by taking advantage of the powers in modern GPUs. Her research also includes parallel algorithms for novel architectures including GPUs. Her novel fast linear bit-reversal algorithm is still noteworthy. Several of her Master's students have had internships at CERN, Switzerland related to GRID computing.

She work very closely with her graduate students and have so far supervised over 50 masters theses, many of which have received prizes. She also supervises/co-supervises several PhD students. Together we have built up her IDI HPC-Lab, a well-respected research lab in heterogeneous and GPU computing which regularly receives international visitors. She has established the NVIDIA CUDA Research and a CUDA Teaching Centers at NTNU as well as a CUDA Teaching Center at The Univ. of Texas at Austin.

Funding partners/collaborators include AMD, ARM, NVIDIA, Statoil and Schlumberger. Collaborators from Medical Technology (SINTEF) and Applied Math, Cybernetics, Marine Tech, Petroleum Engineering and Physics have had and still have several of their master students doing research in our lab. This has been of tremendous benefit for her lab, especially w.r.t. getting access to and gaining understanding of great applications. It is also very satisfying for her to see their work impacting other fields.

Dr. Elster was born in 1962 in Mo i Rana, a town just beneath the Arctic Circle circle in Northern Norway. After completing her secondary education in Porsgrunn, Norway, she received a scholarship to the Univ. of Oregon. She then transferred to the Univ. of Massachusetts at Amherst where she received a B.S. in Computer Systems Engineering with *cum laude* as well as took several courses in computer science and honors mathematics. Anne also holds M.S. and Ph.D. degrees in Electrical Engineering from Cornell University where she had a lot of fun at their supercomputer center (a.k.a. Theory Center) exploring various HPC systems in the late 1980s and early 1990s. After graduating from Cornell, Dr. Elster worked for Schlumberger in Austin before returning to academia via the Univ. of Texas at Austin in 1997. She served on the MPI standards committees (MPI and MPI-2) for Cornell and Schlumberger, respectively, and became a Senior Member of the IEEE in 2000. After joining NTNU in 2001, she served on the Research Council of Norway's HPC committee lead by Prof. Risto Nieminen (TRP III, 2003-2004).

She has an 8-yr-old daughter with husband, Lloyd D. Clark, who is an "MIT -cubed" graduate and telecommunication/wireless expert. Leisure interests include Ham Radio, Swimming, Tennis and Voice

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