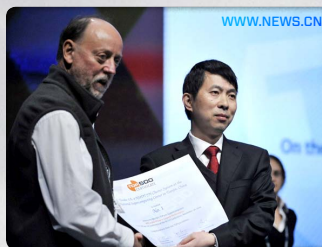


ICL NEWSLETTER

DECEMBER 2010

New Top500 Released at SC '10

The top 5 machines from the 36th edition of the Top500, released on Nov. 11th, are listed below. For the complete list and for more information about all the machines in the top 500 [visit the website](#).



Jack awarding Liu Guangming, director of China's National Supercomputing Center, the certificate for the fastest machine of the Top500.

| | NAME/MANUFACTURER/COMPUTER LOCATION | R _{max} Pflap/s |
|---|---|--------------------------|
| 1 | Tianhe-1A NUDT 6-core Intel X5670 2.93 GHz + Nvidia M2050 GPU w/custom interconnect China NUDT/NSCC/Tianjin | 2.57 |
| 2 | Jaguar Cray XT-5 6-core AMD 2.6 GHz w/custom interconnect USA DOE/SC/ORNL | 1.76 |
| 3 | Nebulae Dawning TC3600 Blade Intel X5650 2.67 GHz, NVidia Tesla C2050 GPU w/ lband China NSCS | 1.27 |
| 4 | Tsubame 2.0 HP Proliant SL390s G7 nodes (Xeon X5670 2.93GHz), NVIDIA Tesla M2050 GPU w/lband Japan TiTech | 1.19 |
| 5 | Hopper Cray XE-6 12-core AMD 2.1 GHz w/custom interconnect USA DOE/SC/LBNL | 1.05 |

Kraken and Jaguar Still Performing Well

UT's Cray XT5, Kraken, though no longer among the world's top 5 fastest machines, is still performing solidly. See [HPCwire's article](#) on its performance.



2010 HPC Challenge Awards

The winners of the annual HPC Challenge Awards were revealed at SC '10. See the [Awards website](#) for the complete list.

SC '11 in Seattle, WA

Now that we know the conference will be in Seattle next year Nov. 12-18, check out this [SC '11 promotional video](#) to hear where the locals think visitors should go in Seattle and some of their thoughts about supercomputing.



EECS Dept. Closing Alumni Computer Accounts

Many of you may have received a notice from EECS labstaff about the termination of legacy accounts (i.e., alumni accounts) on department machines. This is to be completed sometime this month. According to an earlier e-mail announcement from labstaff, "When the accounts are deleted, there will be no services available, including email in any form (sending/receiving/forwarding), Linux/UNIX shell access, or Windows access." If you are no longer affiliated with the university and currently rely on an EECS account for any of these services and you have questions regarding the termination, please contact Paul Peltz at iclhlp@eecs.utk.edu. According to the new account termination policy, accounts will be terminated 6 months following your departure date from the university.

RECENT PAPERS

Baboulin, M., Gratton, S. "A contribution to the conditioning of the total least squares problem," LAPACK Working Note (LAWN) 236, Nov 5, 2010. [PDF](#)

Ballard, G., Demmel, J., Dumitriu, I. "Minimizing Communication for Eigenproblems and the Singular Value Decomposition," LAPACK Working Note (LAWN) 237, Nov 13, 2010. [PDF](#)

Haidar, A., Ltaief, H., Yarkhan, A., Dongarra, J. "Analysis of Dynamically Scheduled Tile Algorithms for Dense Linear Algebra on Multicore Architectures," Concurrency and Computations: Practice and Experience (submitted), November 3, 2010. [PDF](#)

Ma, T., Bosilca, G., Bouteiller, A., Goglin, B., Squyres, J., Dongarra, J. "Kernel Assisted Collective Intra-node Communication Among Multicore and Manycore CPUs," University of Tennessee Computer Science Technical Report, UT-CS-10-663, November 2010. [PDF](#)

Nath, R., Tomov, S., Dongarra, J. "An Improved Magma Gemm for Fermi Gpus," International Journal of High Performance Computing Applications Volume 24, No. 4, November 2010.

RECENT CONFERENCES

NOV 13 - 19 NEW ORLEANS, LA
SC '10

Jack, Terry, Tracy R., Thomas, George, Wes A., Wes B., Piotr, Shirley, Aurelien, Peng, Fengguang, Dave C.

UPCOMING CONFERENCES

DEC 4-8 ATLANTA, GA
Micro-43

Dan, Phil, Vince, James

DEC 6-8 SAN JOSE, CA
MPI Forum
George

RECENT LUNCH TALKS

NOV 5 Jim Plank from EECS
AX = B in GF(2) or The fun you can have when 1+1 = 0
[PDF](#)

NOV 12 Jens Gregor from EECS
Iterative Image Reconstruction in a Distributed Multicore Environment [PDF](#)

NOV 19 No Lunch Talk (SC '10)

NOV 24 SC Review (No Slides)

DEC 3 Aurélien
Dodging the Cost of Unavoidable Memory Copies in Message Logging Protocols [PDF](#)

UPCOMING LUNCH TALKS

DEC 10 Hatem

DEC 17 Dulcinea

DEC 24 No Lunch Talk (Holiday)

DEC 31 No Lunch Talk (Holiday)

INTERVIEW

Dulceneia Becker

Senior Research Associate



As the newest full time member of the research staff, tell us a little about yourself (e.g., where you're from, your educational background).

I was born and grew up in Lajeado, a small city in Rio Grande do Sul, the state in the very south of Brazil. People born in Rio Grande do Sul are called gaúchos and hence I am a gaúcha. I hold a PhD in Applied Mathematics and Computing from Cranfield University, United Kingdom, an MSc in Applied Mathematics from UFRGS - Federal University of Rio Grande do Sul, Brazil, and a BSc in Applied Mathematics and Computing from UNISC - University of Santa Cruz do Sul, Brazil.

Before pursuing my MSc, I worked for a publisher as an administrative manager and desktop publishing designer. Before starting my PhD, I worked as a lecturer at URI - a private university, teaching numerical subjects to graduate and undergraduate students. I left URI and accepted a 6-month fellowship as a researcher and technical assistant at CESUP - National Supercomputing Center at UFRGS, to have time to learn English and fulfill all requirements to be awarded a scholarship from CAPES (Brazilian governmental agency) to study abroad.

In 2002, I moved to the United Kingdom for my PhD, where I also joined a project, developed by AspenTech and Cranfield University, as a researcher. In 2006, I returned to Brazil and I moved to São José dos Campos, state of São Paulo, to join the Gas Turbines Group of the Aeronautical Institute of Technology - ITA, as a postdoctoral researcher to parallelize an in-house Computational Fluid Dynamics code to simulate turbomachinery, and later as a lecturer. I also worked as a consultant and sales director for a company I owned. Before joining ICL, for a short period I worked at Federal University of Uberlândia on the parallelization of a code for multiphase flows simulation.

How did you learn about ICL and what motivated you to join the group?

I have been in contact with Professor's Dongarra work since I started my MSc. A few months ago I decided to leave the company I owned and resolved to explore new possibilities, which included looking for jobs abroad. For someone that comes from a small place in the south of Brazil, it is unlikely to imagine that one day you may have the opportunity

to work directly with someone like Jack. Besides, I was looking for a position where I could be challenged and would have the resources to pursue state-of-the-art research. I also was looking for a group with skilled co-workers from whom I certainly can learn, improve my own skills and hopefully contribute. ICL seems to have it all.

What are your research interests and what are you working on in the group?

I have a quite broad range of research interests, which include parallel computing, numerical linear algebra (both dense and iterative methods), numerical methods and computational fluid dynamics. I am working with linear algebra in the PLASMA project.

Professionally, if you weren't working as a researcher in an academic research lab, what would you like to be doing?

In the level of dreams, I would be flying a fighter jet or driving a Formula 1 car. Down to earth, I would probably be teaching or working as a consultant and software developer.

As a newcomer to the United States and having lived here for only a few weeks now, what are some of the more prominent adjustments you've had to make living in Knoxville and working at an American university?

The language and the local accent, together with food and eating habits, were probably the most prominent adjustments. I learned English in England and, despite having more contact with American English than British English for the last few years, have had to adjust. Driving also required some adjustments. In Brazil we do not have this middle lane to turn left and they also do not exist in England. It was something new for me. The traffic lights are also a little different. I have also noticed major differences in how people do business, advertising and banking. So far, working for an American university has been very similar to working for a Brazilian university.

International Exascale Software Project (IESP) in the News



ICL collaborator and co-lead (with Jack) of the IESP project, Pete Beckman of Argonne National Lab, **recently gave an interview** about the future of exascale computing and the international competition currently taking place in supercomputing.

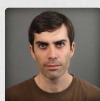
PEOPLE

Departures



Dave Cronk accepted a position with Lockheed Martin and his last day at ICL was Nov. 24th.

Hatem Ltaief has accepted a position with the newly opened **King Abdulla University of Science and Technology** (KAUST) in Saudi Arabia working with David Keyes and will be leaving ICL at the end of the month.



Pierre Lemarinier returned to France on Nov. 24th to work with Christine Morin at INRIA in Rennes.

Grad student **Josh Hoffman** has accepted a position with Quality Manufacturing Systems, Inc. in Nashville and will be leaving at the end of the month.



Stan in the News



ICLer and lead for the MAGMA project, Stan Tomov, was recently interviewed for an **article on Scientific Computing's website** about the use of GPU's in scientific computing.

Jack and Stan Conduct Webinar

On November 3rd, Jack and Stan conducted an **hour-long webinar** for the GPU Computing Forum on developing linear algebra software for GPUs.



NVIDIA Seeking Summer Interns



NVIDIA Corp. is now accepting applications for its summer 2011 graduate internship program in the areas of computer architecture and programming systems. According to NVIDIA, "Topic areas include but are not limited to parallel systems, programming languages, energy-efficient architectures, compilers, interconnection networks, and memory systems. Competitive candidates will have a track record of research excellence, a strong recommendation from a research supervisor, excellent programming skills, and the ability to work in a team environment." Interested candidates should send CV's by January 1, 2011 to: Dr. Steve Keckler, Director of Architecture Research, at skeckler@nvidia.com.

DATES TO REMEMBER

(ONLY HOME GAMES LISTED)

- DEC 11** UT Commencement
- DEC 14** Men's Basketball vs. Oakland – 7:00 pm
- DEC 19** Women's Basketball vs. Stanford – 7:00 pm
- DEC 21** Men's Basketball vs. USC – 7:00 pm
- DEC 22** Women's Basketball vs. ETSU – 7:30 pm
- DEC 23** ICL Closed (Holiday)
- DEC 24** ICL and UT Closed (Holiday)
- DEC 25** Christmas Day
- DEC 27-31** ICL and UT Closed (Holiday)
- DEC 29** Men's Basketball vs. UT Martin – 7:00 pm
- DEC 30** Women's Basketball vs. Rutgers – 7:00 pm
- DEC 31** Men's Basketball vs. College of Charleston – 2:00 pm

Demmel Wins Fernbach Award

Frequent ICL collaborator from UC Berkeley, Jim Demmel, received the 2010 IEEE Computer Society Sidney Fernbach Award at SC '10, joining a distinguished list of previous winners, which includes Jack.



ICL Annual Report Published

For ten years now, we have been producing an annual report that provides a concise profile of our research, including information about the people and external organizations that make it all happen. **Download a copy** and check it out.

SEASON'S
GREETINGS
FROM
ICL & UT
INNOVATIVE
COMPUTING LABORATORY
THE UNIVERSITY of TENNESSEE