ICL NEWSLETTER AUGUST 2008

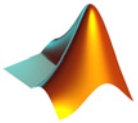
ICL Retreat

The annual ICL Retreat will be August 18th & 19th at the Highland Manor in Townsend. The goal of the retreat is two-fold: First it is important to try to begin the academic year with everyone more or less on the same page. At the retreat we will be able to share information on what has been happening on various projects and what the plans are for the upcoming academic year. Second, the meeting will provide a good occasion for informal discussions of the problems and opportunities that ICL may encounter in the near and long term, and we can brainstorm about some of the changes we can make to help us address both more effectively. As usual we want to allow time to explore future directions and ideas. Leighanne will be sending out logistical information for the retreat shortly. Please respond promptly. Terry will coordinate the talks. See the **preliminary agenda** for the schedule of talks.

Jack to Give Talk at ORNL

On August 7th, Jack will be giving a talk at ORNL titled "An Overview of High-Performance Computing and Challenges for the Future." More information about the talk, including abstract can be found on the ORNL **calendar details** page. ORNL has a very active presentation agenda and quite often has talks very relevant to ICL efforts. Bookmark their **calendar page** or **subscribe via RSS** to see the schedule.

Need Matlab?



The university will soon be offering Matlab licenses from MathWorks. Available to UT student employees as well as regular F/T and P/T employees, this license will include Windows/Linux/Mac versions for both networked and non-networked UT machines (this includes laptops). The licenses will apply not only to the base Matlab program but also to a variety of toolboxes as well. See the college of engineering **announcement** for some details. More information about the licenses will be provided at the ICL retreat.

Cleve Moler to Visit

As part of the rollout of Matlab's site license, Cleve Moler will be visiting campus on August 27th and will present a seminar. Cleve is the creator of Matlab, one of the founders of The MathWorks, and Jack's PhD advisor.

RECENT PAPERS

Dongarra, J., Langou, J. "**The Problem with the Linpack Benchmark Matrix Generator**" Lawn 206, UT-CS-08-621/UCD-CCM-271, June 28, 2008. **PDF**

Buttari, A., Dongarra, J., Kurzak, J., Luszczek, P., Tomov, S. "**Using Mixed Precision for Sparse Matrix Computations to Enhance the Performance while Achieving 64-bit Accuracy**" ACM Transactions on Mathematical Software, Vol 34, No 4 **PDF**

Dongarra, J., Golub, G. H., Grosse, E., Moler, C., Moore, K. "**Netlib and NA-Net: Building a Scientific Computing Community**," IEEE Annals of the History of Computing, April-June 2008 (Vol. 30, No. 2), pp. 30-41. ISSN: 1058-6180 **PDF**

DATES TO REMEMBER

August 15th
SC '08 Student Volunteer Program deadline

August 18th & 19th
ICL Retreat

August 20th
Fall semester classes begin

September 1st
Labor Day Holiday - UT closed

Writing (La)TeX Macros or Want to Know How?

Former ICLer Victor Eijkhout's book *Tex by Topic* is now available printed and bound from Lulu.com. From Lulu: "This is a reference work for the TeX typesetting language. It is valuable for people who want to write LaTeX macros and other customizations of TeX." For more information visit the **site**.

Code Optimization and Timing

Check out former ICLer Clint Whaley's paper (**PDF**) (with co-author Anthony Castaldo) - "Achieving Accurate and Context-sensitive Timing for Code Optimization." Clint is the lead architect and developer of Automatically Tuned Linear Algebra Software (ATLAS). From the paper summary: "The success or failure of an optimization is usually measured by invoking a timer. Understanding how to build reliable and context-sensitive timers is one of the most neglected areas in HPC, and this results in a host of HPC software that looks good when reported in papers, but which delivers only a fraction of the reported performance when used by actual HPC applications. In this paper we motivate the importance of timer design, and then discuss the techniques and methodologies we have developed in order to accurately time HPC kernel routines for our well-known empirical tuning framework, ATLAS."

ICL Lunch Talks

As you know, every Friday we try to have a group lunch at which time we also try to have a guest, visitor, or current ICL staff member give a brief talk about his or her research. Many of you host visitors throughout the year who are often glad to give a lunch talk while they are here. We would like to encourage you to continue inviting your collaborators and others to join us and share their work with the entire group. If you know of someone you would like to invite, please e-mail Scott (**swells@eecs.utk.edu**) or Tracy R. (**rafferty@eecs.utk.edu**) and let them know so they can help you schedule a talk.

SC '08 Accommodations

If you are going to SC and haven't reserved a room, they are going fast. See this entry in **SuperComputing Online** for more information, including important links.

UPCOMING CONFERENCES

August 6-7 Eugene, Oregon
Performance Evaluation Tools Workshop
Dave C.

August 26-29 Las Palmas de Gran Canaria, Spain
Euro-Par 2008
Heike

August 26-28 Stanford, CA
IEEE Hot Interconnects

RECENT CONFERENCES

June 24-27 Toulouse, France
VECPAR'08 8th International Meeting High Performance Computing for Computational Science
Jack

June 30-July 4 Cetraro, Italy
HPC2008
Jack

July 7-11 San Diego, CA
SIAM Annual Meeting 2008
Jack, Marc, Matthew

July 8-11 Snowbird, Utah
Workshop on Automatic Tuning for Petascale Systems
Bilel, Jakub

July 13-17 Seattle, WA
SciDAC 2008
Shirley

July 14-18 Seattle, WA
2008 DoD HPCMP Users Group Conference
Dave C., Tom

July 15-17 Louisville, KY
Open MPI Group Meeting
Aurelien

July 21-24 Snowbird, Utah
Workshop on Performance Tools for Petascale Computing
Shirley

July 28-29 Birmingham, AL
PETTT Strategy Meeting
Dave C.

Interview with Jakub Kurzak

Where are you from, originally?

Wrocław, Poland. Poland is like a mother to me. The fact that I love her does not mean that I need to live with her. I am a Vratislavian by heart and soul. The black eagle sticker on my car is the emblem of Lower Silesian Voivodship, which Wrocław is the capital of. Certain Varsovians still give me a hard time for it by referring to my hometown as "Festung Breslau."

They say the city where you start your life as an emigrant becomes your US hometown. That would be Houston, Texas for me. My American dream was to drive a Mustang convertible on a lonely highway with the radio blasting Roy Orbison. I made it come true in Texas. I also got married in Texas and my son was born in Texas. Texas feels as close to home as it gets on US soil. And although my ex's don't live in Texas, I did move to Tennessee.

Can you summarize your educational background?

I am quite proud of my EE background. I have really good memories from college (well, five year MS program to be exact – that's the way it works in Poland). I'm no stranger to the oscilloscope and soldering gun. Believe it or not, I also learned how to solder optical fiber in college. Also, I don't fear assembly, assembly fears me.

My PhD in Houston was all about parallel programming and performance optimization in the context of computational science (molecular dynamics simulations to be exact). I was lucky enough to be in a group with just a handful of people and close to a million CPU hours to burn through annually. That was fun, fun, fun...

Why did you become interested in linear algebra in the high performance computing context?

It is very rewarding to write software that gets used by other people. Dense linear algebra problems are so fundamental, the software is in widespread use. The hard part is that people have been working on these kinds of problems for decades now, so it is a challenge to be original. The good news is that everybody pays attention, so if you can be original you get noticed easily. It is also a very good feeling if you can outperform codes written by others. Feels like winning a race.

What are you working on right now?

Wrapping up some CELL projects. I am trying to do less work on the CELL. It is incredibly time consuming. I have a grant proposal on my mind to automate the development of SIMD code on the CELL and x86 as well.

I would like to focus my effort on the "coordination language" for PLASMA, a higher-level language for the expression of parallel algorithms. That is the "Holy Grail" we're after right now. Well, many people are and nobody seems to have much success. But no guts, no glory.

Now that you've been here for a couple of years, tell us some things you like about both working at ICL and living in Tennessee.

I like the team spirit. I like that the people around me are knowledgeable / competent / professional / helpful, etc.

Moving from Houston to Knoxville was an adjustment. I'm still adjusting. I love the accent. My neighbors have promised to teach me.

If you could work for any organization in the world, who would you work for and why?

It only makes sense to work for people you can learn from. I feel like I still have a lot to learn from people around me at ICL. Big companies don't impress me with all the bureaucracy and politics going on there. I would not like to be an insignificant gear in somebody's machine. Although I don't perceive myself as an academic type either. This question remains unanswered.

What are your interests/hobbies outside work?

I consider myself a committed gamer. I have been with Xbox since Halo (1). Right now it is the 360 Elite. I have high speed Internet, but no digital cable, just so that the family doesn't get confused what the 40" 1080p Sony is for. I will hurt you in Rainbow Six, own you in Call of Duty, and pawn you in G.R.A.W. I am "TheKOOBAS". **Check out some carnage I did in Halo 3**.

PEOPLE

Visitors

Jack's PhD advisor, Cleve Moler, who was one of the founders of The MathWorks and the creator of the Matlab computing environment, will be visiting UT on August 27th to give a seminar. More information on his visit forthcoming.

Professor Sushil Prasad from Georgia State University's Computer Science department visited August 1st and gave a lunch talk (see Recent Lunch Talks).

Arrivals

Narapat Saengpatsa, a student of former ICLer Thara Angskun, is visiting from the School of Information Technology, Institute of Social Technology, Suranaree University of Technology in Thailand. He will be here until September 30th. Welcome Narapat!

Three new students will be joining the group this month:
Wesley Bland (grad - working with George)
Josh Hoffman (undergrad - working with Jakub)
Rajib Nath (grad - working with Jakub)

Wes Alvaro and Peng Du will be returning this month from their summer internships at Microsoft and The MathWorks, respectively.

Departures

Daniel Lucio successfully defended his Master's thesis on July 25th. In addition, he is the first student to complete the Interdisciplinary Graduate Minor in Computational Science (IGMCS) program, which gives him a minor in computational science. Congratulations Daniel! Daniel's last day at ICL is August 15th.

Megan is leaving August 15th to return to ETSU.

Camille returned to France August 3rd, but will visit again for eight months beginning in November, along with fellow INRIA collaborator Thomas Herault.

RECENT LUNCH TALKS

July 3 Anthony Danalis from University of Delaware
ASPhALT: an Automatic System for Parallel AppLication Transformation PDF

July 11 Dan
Performance Measurement Basics With PAPI and Opteron PDF

July 18 Daniel
Are you Power Aware? PDF

July 25 Shirley's Students
Klaudia and Ciara PDF
Malcolm and Jonté PDF

August 1 Sushil Prasad from Georgia State University
Distributed Algorithms for Lifetime of Wireless Sensor Networks based on Dependency Structure among Cover Sets

UPCOMING LUNCH TALKS

August 8 Alfredo Buttari

August 15 TBA

August 22 TBA

August 29 TBA