Proven Algorithmic Techniques for Many-core Processors Workshop

CANCELLED

brought to you by: Virtual School of Computational Science and Engineering

July 29-August 2, 2013

Studying many current GPU computing applications, we have learned that the limits of an application's scalability are often related to some combination of memory bandwidth saturation, memory contention, imbalanced data distribution, or data structure/algorithm interactions. Successful GPU application developers often adjust their data structures and problem formulation specifically for massive threading and executed their threads leveraging shared on-chip memory resources for bigger impact. We looked for patterns among those transformations, and here present the seven most common and crucial algorithm and data optimization techniques we discovered. Each can improve performance of applicable kernels by 2-10X in current processors while improving future scalability. View complete **COURSE OUTLINE HERE.**

Prerequisites:

- Experience working in a Unix environment
- Experience developing and running scientific codes written in C or C++
- Basic knowledge of CUDA (A short online course, Introduction to CUDA, is available to registered on-site students who need assistance in meeting this prerequisite)

Instructors:

- Wen-Mei W. Hwu, professor of electrical and computer engineering and principal investigator of the CUDA Center of Excellence, University of Illinois at Urbana-Champaign
- David Kirk, NVIDIA fellow
- John Stratton, Ph.D. candidate in Electrical and Computer Engineering and author of the exercise solutions to "Programming Massively Parallel Processors - A Hands-on Approach"

Lectures will be delivered through high-definition videoconferencing in one of LSU's state-of-the-art classrooms, enabling synchronous audio/video Q&A. In addition to the real-time lectures, students will participate in hands-on lab activities with on-site support from skilled teaching assistants. All students will have access to high-performance computing resources for the duration of the course and will receive certificates of completion from VSCSE.

Registration: $100, Register now at the XSEDE Portal!

The other summer school course also being hosted by LSU CCT is on "Data Intensive Summer School, July 8 - 10, 2013 **" . For more information about this course check the VSCSE web page.**

About VSCSE

The Virtual School of Computational Science and Engineering (VSCSE) is a national virtual organization whose goal is to develop and deliver a computational science curriculum that accelerates the ability of faculty, staff, and students to use emerging computational resources to advance science and engineering. Developing and delivering appropriate educational resources requires the collaboration of multiple geographically distributed partner sites with the ability to rapidly experiment with new content and forms of pedagogy in response to new opportunities, technical developments, and challenges.

A unique characteristic of the Virtual School is its use of high-definition (HD) videoconferencing technology to assemble a geographically dispersed group of sites into a cohesive HD classroom. In doing so, the Virtual School delivers a quality curriculum to a large number of students at a reduced cost. Moreover, since the resulting cyberinfrastructure is reusable, the per-site cost may be further amortized over time.

Funding and support for the Virtual School are provided by the Great Lakes Consortium for Petascale Computation (GLCPC), the National Science Foundation(NSF), the State of Illinois, the Committee on Institutional Cooperation (CIC), and Internet2 Commons.

Class Location and Directions

Johnston Hall, Room 338; Louisiana State University, Baton Rouge, LA

Directions to campus **CLICK HERE**.

Parking on campus requires a permit. Please stop at the LSU Visitor Center to request one between the hours of 7:30 AM and 4:30 PM located on the corner of Highland Road and Dalrymple Drive.

Campus Map: http://campusmap.lsu.edu/

Questions: please contact kjones (at) cct.lsu.edu.

Suggested Lodging

Staybridge Suites - University at Southgate, Baton Rouge
4001 Nicholson Drive, Baton Rouge, LA 70808
Check In; 3:00 PM; Check Out: 12:00 PM
Front Desk: 225-456-5430

LSU Bus (LSU Tiger Trails)
Picks up visitors in front of Staybridge Suites free of charge (near road: Nicholson Road), includes a bus stop right in front of Johnston Hall. View times of operation and bus routes at (Tigerland A, Tigerland B, or Burbank-Ben Hur routes):
https://sites01.lsu.edu/wp/tigertrails/times-of-operation/

Find your bus: http://lsu.transloc.com/

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