CS 4523 Programming Massively Parallel Processors

Syllabus, Spring 2016

Department of Computer Science, KSU

Instructor: Dr. Dan Chia-Tien Lo
Office: J-360
Phone: (678) 915-5487
Email: D2L email
Office Hours: M 4:30-6:30 pm, T 10:00-12:00 am, W 3:00-5:00 pm, walk-in, or by appointment
Time and Place: MW 6:30 – 7:45 at J-217
Email Reply Policy:

- Email messages received by 5:00 PM in weekdays will be replied in the same day (by 11:59 PM).
- Other messages will NOT be guaranteed to be responded in the same day.
- Add course number as part of email subject.

TA: Carlos Cepeda Mora
Office Hours: M/T/W 2:00 - 4:00 PM
Email: ccepedam@students.kennesaw.edu

Prerequisite: CS 3304, CS 3502

Description:
A study of practical parallel algorithms with an emphasis on implementation and performance issues on massively parallel processors. Design and implement high performance computing applications using CUDA running on Graphics Processing Unit (GPU). Topics include heterogeneous parallel programming, hardware threading models, synchronization, parallel blocking algorithms, register allocations, memory performance, and inter-thread communication.

Objectives:

After successful completion of this course, the students will be able to:

1. Apply parallel program in solving real world applications
2. Design parallel programs running on GPUs
3. Analyze performance for parallel programs versus sequential programs

Grading:

- Programming Assignments (including a term project 20%): 45%
- Test 1&2: 30%
- Test 3: 15%
- Attendance & Quizzes: 10%

Late assignment will receive penalty based on the formula, penalty = \((\text{number of days late})^3\), and must be submitted through Late Submission Dropbox in D2L. No make-up exams will be given except for university-sanctioned absences. The students are expected to attend all classes.

Points to grade ratio (I reserve the right to make adjustments for borderline cases.)

- A: [90, 100]
Textbook:


Scholastic Dishonesty:

All individual assignments are meant to be done *individually*. Sharing your code with others or vice versa is strongly prohibited. Students, however, can discuss assignments without sharing detailed algorithms and program code. Students are encouraged to help each other debug programs but are not allowed to put someone's code as a quick fix. Submission of a copy of someone's code or a copy with some extensive modifications, is considered as plagiarism. Making available someone's work is unacceptable.

The penalty for academic dishonesty will be zero in the assignment, lowering the final grade up to two letters (in addition to not getting credit for the assignment), and reporting this incident to the CS Dept., which may take additional actions. The following source may give you background information on the subject: http://scai.kennesaw.edu/docs/KSU%20Codes%20of%20Conduct-2015.pdf.

Disability Statement

“Kennesaw State University offers high quality education to students throughout metro Atlanta and northwest Georgia through baccalaureate and master’s degree programs of study. Effective teaching and learning are central institutional priorities. Service and research that strengthen teaching and address the public’s interests are important supportive priorities. Faculty, staff and administrators are committed to providing a challenging and facilitative collegiate environment that fosters high-quality academic preparation, critical thinking, global and multicultural perspectives, effective communication and interpersonal skills, leadership development, social responsibility and lifelong learning. Programs that prepare students well for the advancement of professional pursuits are especially attractive and are offered in the schools and colleges of the university.” (KSU Catalog). The coordinator can be contacted at 678-915-7244.

Policy on Electronic Devices

The students must turn off their electronic devices such as cell phones, blackberries, pagers, etc. Otherwise, they must be put in either silent or vibrating mode so that class is not interrupted in the event of a call.

The official class web page is: GerogiaView D2L

Class information will be posted on that page. Students bear the responsibility for reading the web page.

Class Schedule:

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