NSF/TCPP CDER Telecon on Book Project

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Agenda

• 5 min - Webinar logistics
• 5 min - CDER Center overview
• 15 min – To learn about early adopters' and other's experiences, their needs, current gaps
• 35-50 min - Discussion on book project, book's content
• 10 min – Solicitation for contributions to web resource
• 10 min - Follow up discussion on EduPar-13, improvements needed for EduPar-14
Webinar Logistics

• Use “raise hand” button to ask staff to speak.
• Submit questions for answer online or offline post telecon
• **Initiate chat**
  • To an individual, or
  • To all
Center for Parallel and Distributed Computing Curriculum Development and Educational Resources (CDER)

• Develop **PDC core curricula** flexible enough for a broad range of programs and institutions; collaborate with all stakeholders
  – Curriculum Site: [http://www.cs.gsu.edu/~tcpp/curriculum](http://www.cs.gsu.edu/~tcpp/curriculum)

• Develop, collect, and synthesize **pedagogical and instructional materials** for teaching PDC curriculum topics*
  – Website [setup](http://www.cs.gsu.edu/~tcpp/curriculum)
  – Book Project

• Facilitate access to state-of-the-art **hardware and software resources** for PDC instruction and training by instructors and students*
  – Linux cluster access for instructor/student access
  – Access to GENI, XSEDE resources
  – Email me

• Organize Early Adopter Competitions and EduPar workshops, and related events*
  – Fall-13 early adopter competition – deadline June 30
  – Invitation for reviewers

* Call for participation and contribution
Your experience and current resources (15 min)

• What resources are you able to tap into?
  – Experiences teaching core courses with PDC topics
  – Textual and reference material employed,
    • Books/Chapters
    • Article/Essay
    • Lecture Module
  – Your needs, current gaps?

• What is missing in the PDC curriculum?

  ALGORITHMS
  Parallel and Distributed Models and Complexity
  Algorithmic Paradigms
  Divide & conquer (parallel aspects)
  Algorithmic problems

  ARCHITECTURE
  PROGRAMMING
  CROSS-CUTTING
CDER Book Project
(40-50 min)

• Lack of suitable textbooks to integrate PDC topics into the core courses
  – CS1, CS2, Systems, and Data Structures and Algorithms

• Part I - For instructors: Basic Concepts and References on what and how to teach
  • Sample essays on Asymptotics, Scalability, and Synchronization posted; A few on Parallel Time, Pipelining, Shared Memory Programming underway

• Part 2: For students: Supplemental teaching material for core courses
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• Part 1: For Instructors
  – *Definitions/Concept*
  – *Illustrate pitfalls/limitations*
  – *Where it could be covered? Along with which topics?*
  – *What are good examples to employ in CS0, CS1, CS2, DS/A, etc.*

• The book may have progressively sophisticated treatment, allowing instructors to cover a subset of initial subsections as appropriate for each course.
  – For example, 4.1 in CS1, 4.1,4.2 in CS2, 4.3 and 4.4. in DS/A, etc.
  – May not have to worry too much in terms of difficulty of sections.
    – It is better to cover in more depth, than to leave out a topic.

• Identify how PDC concepts reoccur across topics/courses

• The section/chapters will be more or less complete treatment of chosen topic/problem/example.
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• Part 2: For students
  – Supplemental textual material for core courses
    • textbook supplement
    • portions of custom textbook
    • authors can draw upon for their own writings
  – Students should be able to rely on this writeup for learning, exercises, ...
  – This would be unique material
    • which cannot be readily found elsewhere (current texts, slides, web, etc.)

• Discussion on book’s content
• Other ideas?
Submit proposals ½ - 1 page – deadline **June 28**

- Context: PDC topic hierarchy
- Part 1: For instructors
  - Cohesiveness an important goal
  - Independent essays welcome
- Part 2: For students
- Collaborative teams possible
  - Post-proposal team may also be formed
- Readable, complete, usable, adaptable, not a information dump

- Proposal Review – notification deadline **July 15**
- Submit sections/essays/parts/chapters – deadline **Aug 22**
- Q&A
Solicitation for Contribution to CDER Courseware Website

Upload and Search Course Material

• **Type:**
  – Slides, Syllabus, Tutorial, Video
  – Animation, Article, Award, Blog, Book, Competition
  – Course Template, Course Module, Data
  – Hardware Access, Software/Tools
  – Proposal, Report

• **Courses:**
  – CS1, CS2, Systems, Data Structures and Algorithms, ...

• **NSF/TCPP Topic/Subtopic Classification:**

  ALGORITHMS
  – Parallel and Distributed Models and Complexity
  – Algorithmic Paradigms
  – Divide & conquer (parallel aspects)
  – Algorithmic problems

  ARCHITECTURE
  PROGRAMMING
  CROSS-CUTTING
Early Adopter Program

• Total 80 institutions worldwide
  – Spring-11: 16 institutions; Fall’11: 18;
  – Spring-12: 21; Fall-12: 25 institutions
  – Most from US (4 year to research institutions);
    • some from South America, A few from Europe, fewer from Asia (India, China).

• Fall-13 round of competition: Deadline June 30, 2013
  – NSF/Intel funded cash awards ranging from $1k-2.5K + certificate
  – *Which course(s), topics, evaluation plan?*

• Instructors for core CS/CE courses such as CS1/2, Systems, Data Structures and Algorithms – department-wide multi-course multi-semester adoption preferred
  – Elective courses; graduate courses,
  – Computational Science, computational courses of STEM disciplines
Follow up discussion on EduPar-13, improvements needed for EduPar-14

• What worked
• What did not work
• 2 day workshop?