Computer Science Colloquium

Tuesday, September 11, 2012
12:30pm – 1:45pm
Petty Building, Room 136

Seeds Pattern Programming Framework

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Abstract:
A higher-level pattern programming approach to parallel and distributed programming will be presented. Pattern programming has number of advantages over lower-level parallel programming including ease of programming and scalability. A new Java-based pattern programming framework has been developed that enables programmers to create and execute parallel programs by first selecting a computational pattern such as a workpool pattern or a pipeline pattern. Once the programmer has implemented a few basic Java interfaces (notably to distribute the data, the computation, and to gather the data), the framework will deploy and automatically distribute the tasks across distributed computers and processor cores. It may be that a single pattern will not suffice for a larger problem. The framework offers nested patterns and facilities to merge patterns. The key aspect in the approach is the programmer does not write programs at the low level of message-passing MPI or thread-based APIs.

Speaker Bio:
Barry Wilkinson is a Professor of Computer Science at the University of North Carolina at Charlotte. He received a B.S. degree in Electrical Engineering with first-class honors from the University of Salford, England in 1969, and M.S. and Ph.D. degrees in Computer Science from the University of Manchester, England in 1971 and 1974 respectively. He is the author of six textbooks with four second editions, including *Parallel Programming Techniques and Applications Using Networked Workstations and Parallel Computers* (with M. Allen, Prentice Hall 1999, 2nd ed. 2005) and *Grid Computing: Techniques and Applications* (Chapman & Hall/CRC Press, 2010). In addition to these books, he has published many research papers in major computer journals. He was a finalist for the SC11 (Supercomputing 2011) Undergraduate Engineering and Sciences (UCES) award for his work on a state-wide grid computing course. He has been supported by the National Science Foundation with six grants since 1996 on parallel and distributed computing and received support from NVIDIA Corporation for UNC-Charlotte to become a NVIDIA CUDA Teaching Center in 2010.