Multicores: Architectures, Programming and Beyond

Dr. Kolin Paul
Dept of Computer Science & Engineering
Indian Institute of Technology Delhi

Abstract

Most vendors have realized that multicores is probably the best bet to meet increasing transistor densities with scalable performance and with a reasonable control on power. The community is almost unanimous in the view that effective programming of these machines requires domain knowledge in parallel architectures, parallel programming as well as multithreaded programming. In this tutorial we begin by describing the architectural issues in multicore architectures. Clearly the power/performance advantage of these architectures can only be exploited if we have both parallel applications (workloads) and "efficient" parallel programming techniques. We will review current techniques and also provide pointers towards "promising" research directions. We will also describe transactional memory, a method that brings the idea of database transactions for programming these massive compute engines.

About the Speaker

Dr. Kolin Paul received his B.E. degree from NIT Silchar in 1993 and Ph.D. in 2002 from BE College (DU), Shibpore. During 2002-3 he did his post doctoral studies at Colorado State University, Fort Collins, USA. He has previously worked at IBM and as a Lecturer in the Department of Computer Science at the University of Bristol, UK. Currently, he is an Assistant Professor in the Department of Computer Science and Engineering, IIT Delhi. His research interests are in understanding high performance architectures and compilation systems.