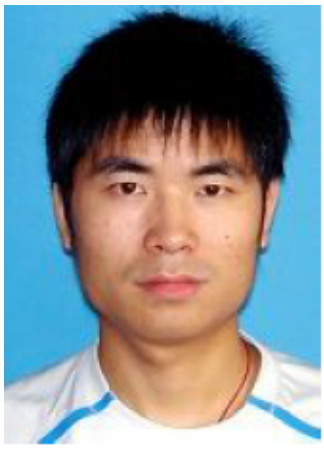

Xiaonan "Daniel" Tian, University of Houston

Title:
Directive-based Approach for Accelerator Computing

Abstract:
Accelerator-based computing, commonly utilizing Graphics Processing Units (GPUs) or Accelerated Processing Units (APUs), have gained wide popularity on the road to exascale. However, significant advances in programming models are required for accelerator-based systems in order to close the gap between achievable and theoretical peak performance. Furthermore, these advances should not come at the cost of programmability.

In particular, two challenges for programming models are addressed in our work: (1) they must support fine-grained parallelism and locality-awareness within a chip, and (2) they should provide an incremental migration path for existing applications targeting future systems. My dissertation focuses on a directive-based solution which satisfies the second challenge by enabling incremental parallelization of existing codes. Directive-based programming models for accelerators, such as OpenACC and OpenMP, help non-expert programmers to parallelize applications productively and achieve portable performance. In this presentation, we will gives an overview of OpenACC which is directive-based industrial standard programming model and how the OpenACC is implemented on the OpenUH compiler.

Bio:
Xiaonan Tian is fifth years Ph.D student in HPCTools group of the Dept. of Computer Science, University of Houston and He received my M.S.in Physics in 2007 and B.E.in Computer Science and Technology in 2004 from China. Before joining to HPCTools group, he had worked in Actions Semiconductor for four years. His Research focuses on the high performance computing and compiler optimization. He is one of the major authors of OpenACC implementation in OpenUH compiler. His dissertation topic is "Directive-based Approach for Accelerator Computing."