

# PMAM 2017 Workshop Program

(5th February, 2017)

08:50 – 09:00: Opening Remarks

Quan Chen, Zhiyi Huang

09:00 – 10:00: Keynote

Xipeng Shen, North Carolina State University

Title: Towards Intelligent Programming Systems for Modern Computing

Abstract: Modern computing exhibits new challenges, which includes the rapid increase of the volume and variety of data, the shift of computing towards cloud and IoT, and the fast development of heterogeneity in processors and memory. To address these challenges, one of the keys exists in making programming systems more intelligent. In this talk, Dr. Shen will present the progresses his group has achieved in the recent years towards that goal. These techniques help raise program analysis and optimizations to a new level, make programming systems self learn and evolve, and helps programs overcome hardware limitations to better harness the power of modern heterogeneous systems (e.g., GPU).

Bio: Xipeng Shen is an Associate Professor in the Computer Science Department at North Carolina State University. He is a receipt of U.S. DOE Early Career Research Award, U.S. NSF CAREER Award, and Google Faculty Research Award. He is an ACM Distinguished Speaker, and an IBM Center for Advanced Studies (CAS) Faculty Fellow. His research lies in the broad field of compiler and programming systems, with an emphasis on enabling data-intensive high performance computing and intelligent computing through innovations in both compilers and runtime systems. Prior to joining NC State in 2014, Shen was an Adina Allen Term Distinguished Associate Professor at The College of William and Mary. He was a Visiting Scientist at MIT and Microsoft Research, and had served as a consultant to Intel Labs and Cisco. He received his Ph.D. in Computer Science from University of Rochester in 2006, M.S. from Chinese of Academy of Sciences in 2001, and B.S. from the North China University of Technology in 1998.

10:00- 10:30: Morning Break

10:30 – 11:50: Session 1: Programming Models, Languages and Tools

Session Chair: Hailong Yang, Beihang University

Hartwig Anzt, Jack Dongarra, Goran Flegar, Enrique S. Quintana-Ortí. “Batched Gauss-Jordan Elimination for Block-Jacobi Preconditioner Generation on GPUs”.

Germán Ceballos, Thomas Grass, Andra Hugo, David Black-Schaffer. “TaskInsight: Understanding Task Schedules Effects on Memory and Performance”.

P. Karpiński, J. McDonald. “A high-performance portable abstract interface for explicit SIMD vectorization”.

Shouq Alsubaihi, Jean-Luc Gaudiot. “PETRAS: Performance, Energy and Thermal Aware Resource Allocation and Scheduling for Heterogeneous Systems”.

11:40 – 13:15: Lunch break

13:15-14:55 Session2: GPU and Asymmetric Processors

Session Chair: Xiaoyi Lu, Ohio State University

Pedro Alonso, Sandra Catalán, José R. Herrero, Enrique S. Quintana-Ortí, Rafael Rodríguez-Sánchez. “Reduction to Tridiagonal Form for Symmetric Eigenproblems on Asymmetric Multicore Processors”.

Pingfan Li, Xuhao Chen, Jie Shen, Jianbin Fang, Tao Tang, Canqun Yang. “High Performance Detection of Strongly Connected Components in Sparse Graphs on GPUs”.

Michael Haidl, Michel Steuwer, Hendrik Dirks, Tim Humernbrum, Sergei Gorlatch. “Towards Composable GPU Programming: Programming GPUs with Eager Actions and Lazy Views”.

Chen Shen, Xiaonan Tian, Dounia Khaldi, Barbara Chapman. “Assessing One-to-One Parallelism Levels Mapping for OpenMP Offloading to GPUs”. (Short Paper)

Chao Liu, Miriam Leeser. “A Framework for Developing Parallel Applications with high level Tasks on Heterogeneous Platforms”. (Short Paper)

14:55 – 15:00: Closing Remarks

Quan Chen, Zhiyi Huang