

# Preface

This collection is a tribute to the intellectual leadership and legacy of Prof. Ahmed H. Sameh. His significant contributions to the field of Parallel Computing, over his long and distinguished career, have had a profound influence on high performance computing algorithms, applications, and systems. His defining contributions to the field of Computational Science and Engineering, and its associated educational program, resulted in a generation of highly trained researchers and practitioners. His high moral character and fortitude serve as exemplars for many in the community and beyond.

Prof. Sameh did his graduate studies in Civil Engineering at the University of Illinois at Urbana-Champaign (UIUC). Upon completion of his Ph.D. in 1966, he was recruited by Daniel L. Slotnick, Professor and Director of the Illiac IV project, to develop various numerical algorithms. Prof. Sameh joined the Department of Computer Science as a Research Assistant Professor, subsequently becoming a Professor, and along with Profs. Duncan Lawrie, Daniel Gajski and Edward Davidson served as the Associate Director of the Center for Supercomputing Research and Development (CSRD). CSRD was established in 1984 under the leadership of Prof. David J. Kuck to build the University of Illinois Cedar multiprocessor. Prof. Sameh directed the CSRD Algorithms and Applications Group. His visionary, yet practical outlook, in which algorithms were never isolated either from real applications or from architecture and software, resulted in seminal contributions. By 1995 CSRD's main mission had been accomplished, and Prof. Sameh moved to the University of Minnesota as Head of the Computer Science Department and William Norris Chair for Large-Scale Computing. After a brief interlude, back at UIUC, to lead CSRD, during which he was very active in planning the establishment of Computational Science and Engineering as a discipline and an associated graduate program at UIUC, he returned to Minnesota, where he remained until 1997. He moved to Purdue University as the Head and Samuel D. Conte Professor of Computer Science. Prof. Sameh, who is a Fellow of SIAM, ACM and IEEE, was honored with the IEEE 1999 Harry H. Goode Memorial Award "For seminal and influential work in parallel numerical algorithms".

It was at Purdue that over 50 researchers and academic progeny of Prof. Sameh gathered in October 2010 to celebrate his 70th birthday. The occasion was the *Con-*

*ference on High Performance Scientific Computing: Architectures, Algorithms, and Applications* held in his honor. The attendees recalled Prof. Sameh's many academic achievements, including, not only his research but also his efforts in defining the interdisciplinary field of Computational Science and Engineering and his leadership and founding Editor-in-Chief role in the IEEE CS&E Magazine as well as the many doctoral candidates that he has graduated: At UIUC, Jonathan Lermitt (1971), John Larson (1978), John Wisniewski (1981), Joseph Grcar (1981), Emmanuel Kamgnia (1983), Chandrika Kamath (1986), Mark Schaefer (1987), Hsin-Chu Chen (1988), Randall Bramley (1988), Gung-Chung Yang (1990), Michael Berry (1990), Felix G. Lou (1992), Bart Semeraro (1992) and Vivek Sarin (1997); Ananth Grama (1996) at the University of Minnesota; and Zhanye Tong (1999), Matt Knepley (2000), Abdelkader Baggag (2003), Murat Manguoglu (2009) and Carl Christian Kjelgaard Mikkelsen (2009) at Purdue.

This volume consists of a survey of Prof. Sameh's contributions to the development high performance computing and sixteen editorially reviewed papers written to commemorate the occasion of his 70th birthday.

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