Book title:

Advanced software technologies for post-peta scale computing

--- Researches of Japanese Post-Petascale CREST project ---

1. Overview of software technologies for post-peta scale computing

Author: Mitsuhisa Sato

2. ppOpen-HPC/pK-Open-HPC: Application Development Framework with Automatic Tuning

Authors: Kengo Nakajima (The University of Tokyo), Takashi Arakawa (RIST), Akihiro Ida (The University of Tokyo), Takahiro Katagiri (Nagoya University), Masatoshi Kawai (The University of Tokyo), Masaharu Matsumoto (The University of Tokyo), Hisashi Yashiro (RIKEN)

3. Scalable Eigen-analysis Engine for Large-scale Eigenvalue Problems

Authors: Tetsuya Sakurai (University of Tsukuba), Yasunori Futamura (University of Tsukuba), Akira Imakura (University of Tsukuba), Toshiyuki Imamura (Riken)

4. System Software for Many-core & Multi-core Architecture

Author : Atsushi Hori

5. Highly Productive, High Performance Application Frameworks for Post Petascale Computing

Authors: Naoya Maruyama (RIKEN), Takayuki Aoki (Tokyo Institute of Technology), Kenjiro Taura (University of Tokyo), Rio Yokota (Tokyo Institute of Technology), Mohamed Wahib (National Institute of Advanced Science and Technology), Motohiko Matsuda (RIKEN), Keisuke Fukuda (Tokyo Institute of Technology), Takashi Shimokawabe(University of Tokyo), Naoyuki Onodera (Japan Atomic Energy Agency), Michel Mueller (Tokyo Institute of Technology), Shintaro Iwasaki (University of Tokyo)

6. System software for data-intensive science

Authors: Osamu Tatebe, Yoshihiro Oyama, Masahito Tanaka, Hiroki Ohtsuji, Fuyumasa Takatsu, Xieming Li

7. Approaches for Memory-Efficient Communication Library and Runtime Communication Optimization

Author: Takeshi Nanri

8. A development platform for embedded domain-specific languages.

Author: Shigeru Chiba

9. Xevolver: a user-defined code transformation approach to streamlining legacy code migration

Authors: Hiroyuki Takizawa, Reiji Suda, Daisuke Takahashi, and Ryusuke Egawa

10. Numerical Library based on Hierarchical Domain Decomposition

Authors: Ryuji SHIOYA, Masao OGINO, Hiroshi KAWAI

11. Advanced Computing & Optimization Infrastructure for Extremely Large-Scale Graphs on Post Peta-Scale Supercomputers

Authors: Katsuki FUJISAWA, Hitoshi SATO, Ryo MIZOTE, Toshio ENDO, Koji UENO and Toyotaro SUZUMURA

12. Software Technology that Deals with Deeper Memory Hierarchy in Post-petascale Era

Authors: Toshio Endo, Hiroko Midorikawa, Yukinori Sato

13. Power Management Framework for Post-Petascale Supercomputers

Authros; Masaaki Kondo (The University of Tokyo), Ikuo Miyoshi (Fujitsu Limited),

Koji Inoue (Kyushu University), Shinobu Miwa (The University of Electro-Communications)

14. Project CASSIA --- Framework for Exhaustive and Large-scale Social Simulation ---

Authors: Itsuki Noda (AIST), Yohsuke Murase (Riken), Nobuyasu Ito (Univ. Tokyo & Riken), Kiyoshi Izumi (Univ. Tokyo), Hiromitsu Hattori (Ritsumei Univ.), Tomio Kamada (Kobe Univ.), Hideyuki Mizuta (IBM)

15. GPU Accelerated Language and Communication Support by FPGA

Authors: Taisuke Boku (University of Tsukuba), Hideharu Amano (Keio University), Hitoshi Murai (RIKEN), Masayuki Umemura (University of Tsukuba), Toshihiro Hanawa (the University of Tokyo), Yoshiki Yamaguchi (University of Tsukuba), Masahiro Nakao (RIKEN), Yasuteru Shigeta (University of Tsukuba)