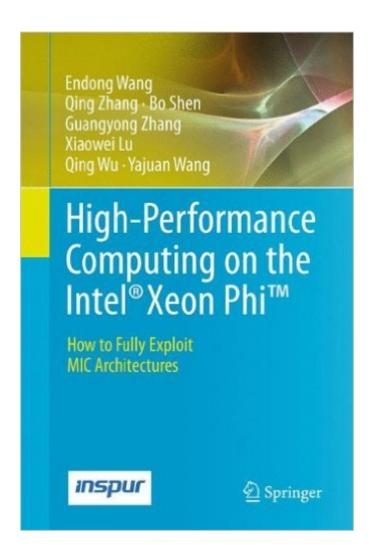


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High-Performance Computing On The Intel® Xeon Phiâ, ¢: How To Fully Exploit MIC Architectures





Synopsis

The aim of this book is to explain to high-performance computing (HPC) developers how to utilize the Intel® Xeon Phiâ,¢ series products efficiently. To that end, it introduces some computing grammar, programming technology and optimization methods for using many-integrated-core (MIC) platforms and also offers tips and tricks for actual use, based on the authorsâ ™ first-hand optimization experience. The material is organized in three sections. The first section, â œBasics of MICâ •, introduces the fundamentals of MIC architecture and programming, including the specific Intel MIC programming environment. Next, the section on â cePerformance Optimizationâ • explains general MIC optimization techniques, which are then illustrated step-by-step using the classical parallel programming example of matrix multiplication. Finally, â œProject developmentâ • presents a set of practical and experience-driven methods for using parallel computing in application projects, including how to determine if a serial or parallel CPU program is suitable for MIC and how to transplant a program onto MIC. This book appeals to two main audiences: First, software developers for HPC applications â " it will enable them to fully exploit the MIC architecture and thus achieve the extreme performance usually A required in biological genetics, medical imaging, aerospace, meteorology and other areas of HPC. Second, students and researchers engaged in parallel and high-performance computing â " it will guide them on how to push the limits of system performance for HPC applications.

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Endong Wang is the Director of the State Key Laboratory of High-Efficiency Server and Storage Technology at the Inspur-Intel China Parallel Computing Joint Lab and Senior Vice President of the Inspur Group Co., Ltd. Qing Zhang is the lead engineer of the Inspur-Intel China Parallel Computing Joint Lab and with his team he was among the first to work with the development environment of the Intel® Xeon processor and Intel® Xeon Phiâ,¢ coprocessor. Together they have several years of experience in HPC programming.

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