1.	Record Nr.	UNINA9910746095603321
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	Titolo	Performance analysis of parallel applications for HPC / / Jidong Zhai, Yuyang Jin, Wenguang Chen, Weimin Zheng
	Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2023
	ISBN	981-9943-66-3
	Edizione	[1st ed. 2023.]
	Descrizione fisica	1 online resource (xv, 256 pages) : illustrations
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	Disciplina	004.35
	Soggetti	High performance computing Parallel programs (Computer programs)
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Chapter 1. Background and Overview -- Part I. Performance Analysis Methods: Communication Analysis -- Chapter 2. Fast Communication Trace Collection -- Chapter 3. Structure-Based Communication Trace Compression -- Part II. Performance Analysis Methods: Memory Analysis -- Chapter 4. Informed Memory Access Monitoring -- Part III. Performance Analysis Methods: Scalability Analysis -- Chapter 5. Graph Analysis for Scalability Analysis -- Chapter 6. Performance Prediction for Scalability Analysis -- Part IV. Performance Analysis Methods: Noise Analysis -- Chapter 7. Lightweight Noise Detection -- Chapter 8. Production-Run Noise Detection -- Part V. Performance Analysis Framework -- Chapter 9. Domain-Specific Framework for Performance Analysis -- Chapter 10. Conclusion and Future Work.
	Sommario/riassunto	This book presents a hybrid static-dynamic approach for efficient performance analysis of parallel applications on HPC systems. Performance analysis is essential to finding performance bottlenecks and understanding the performance behaviors of parallel applications on HPC systems. However, current performance analysis techniques usually incur significant overhead. Our book introduces a series of approaches for lightweight performance analysis. We combine static and dynamic analysis to reduce the overhead of performance analysis.

Based on this hybrid static-dynamic approach, we then propose several innovative techniques for various performance analysis scenarios, including communication analysis, memory analysis, noise analysis, computation analysis, and scalability analysis. Through these specific performance analysis techniques, we convey to readers the idea of using static analysis to support dynamic analysis. To gain the most from the book, readers should have a basic grasp of parallel computing, computer architecture, and compilation techniques.