

1. Record Nr.	UNINA9910847581503321
Autore	Fumero Juan
Titolo	Programming Heterogeneous Hardware via Managed Runtime Systems / / by Juan Fumero, Athanasios Stratikopoulos, Christos Kotselidis
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2024
ISBN	3-031-49559-4
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (147 pages)
Collana	SpringerBriefs in Computer Science, , 2191-5776
Disciplina	005.13
Soggetti	Programming languages (Electronic computers) Computers Java (Computer program language) Python (Computer program language) Programming Language Computer Hardware Java Python
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1. Introduction -- 2. Heterogeneous Hardware -- 3. Heterogeneous Programming Models -- 4. Managed Runtime Environments -- 5. Programming Heterogeneous Hardware via Managed Runtime Systems -- 6. Conclusions.
Sommario/riassunto	This book provides an introduction to both heterogeneous execution and managed runtime environments (MREs) by discussing the current trends in computing and the evolution of both hardware and software. To this end, it first details how heterogeneous hardware differs from traditional CPUs, what their key components are and what challenges they pose to heterogenous execution. The most ubiquitous ones are General Purpose Graphics Processing Units (GPGPUs) which are pervasive across a plethora of application domains ranging from graphics processing to training of AI and Machine Learning models. Subsequently, current solutions on programming heterogeneous MREs are described, highlighting for each current existing solution the

associated advantages and disadvantages. This book is written for scientists and advanced developers who want to understand how choices at the programming API level can affect performance and/or programmability of heterogeneous hardware accelerators, how to improve the underlying runtime systems in order to seamlessly integrate diverse hardware resources, or how to exploit acceleration techniques from their preferred programming languages.
