

Edge Computing Resilience

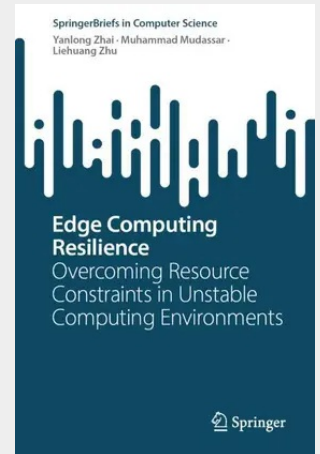
Overcoming Resource Constraints in Unstable Computing Environments

Edge computing has emerged as a powerful technology for efficiently executing tasks by pushing cloud computing capabilities to the edge of the network. This approach significantly improves the quality of services of IoT applications and greatly enhances the performance of resource-constraint edge devices. However, with the explosive growth in users and data generation, low-computing-capability devices often struggle to meet computation demands in time, posing a significant challenge to the success of edge computing. These challenges include latency requirements, low computational power, system heterogeneity, energy constraints and privacy issues. To address these challenges, it is critical to design robust edge computing systems.

This book provides a systematic and comprehensive analysis of edge computing challenges and presents resilient designs and frameworks suitable for real-time edge computing applications. The discussion primarily focuses on overcoming resource constraints in unstable edge computing environments, which is achieved through various concepts and technologies, such as fault handling, optimization and computation offloading.

The book is significant to researchers in the field of edge computing, especially in the context of the resource-constrained paradigm, IoT application execution in the edge and fog computing. The book features innovative models and frameworks for processing time-critical, energy-aware and privacy-aware applications. By reading this book, researchers and professionals will gain a deeper understanding of different technologies and frameworks for edge computing and develop an appreciation for edge computing resilience. This resilience makes the edge system robust against frequent system failures for real-time IoT applications. The book provides a foundation for future research in this field and is an essential read for those seeking to advance their knowledge and expertise in edge computing.

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58,84 €

54,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9789819769971

Medium: Buch

ISBN: 978-981-97-6997-1

Verlag: Springer

Erscheinungstermin: 08.10.2024

Sprache(n): Englisch

Auflage: 2024

Serie: SpringerBriefs in Computer Science

Produktform: Kartoniert

Gewicht: 236 g

Seiten: 127

Format (B x H): 155 x 235 mm

