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Shaping the Future of IoT with Edge Intelligence

How Edge Computing Enables the Next Generation of IoT Applications

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Description:

This book presents the technologies that empower edge intelligence, along with their use in novel IoT solutions. Specifically, it presents how 5G/6G, Edge AI, and Blockchain solutions enable novel IoT-based decentralized intelligence use cases at the edge of the cloud/edge/IoT continuum. Emphasis is placed on presenting how these technologies support a wide array of functional and non-functional requirements spanning latency, performance, cybersecurity, data protection, real-time performance, energy efficiency, and more. The various chapters of the book are contributed by several EU-funded projects, which have recently developed novel IoT platforms that enable the development and deployment of edge intelligence applications based on the cloud/edge paradigm. Each one of the projects employs its own approach and uses a different mix of networking, middleware, and IoT technologies. Therefore, each of the chapters of the book contributes a unique perspective on the capabilities of enabling technologies and their integration in practical real-life applications in different sectors. The book is structured in five distinct parts. Each one of the first four parts focuses on a specific set of enabling technologies for edge intelligence and smart IoT applications in the cloud/edge/IoT continuum. Furthermore, the fifth part provides information about complementary aspects of next-generation IoT technology, including information about business models and IoT skills. Specifically:

- The first part focuses on 5G/6G networking technologies and their roles in implementing edge intelligence applications.
- The second part presents IoT applications that employ machine learning and other forms of Artificial Intelligence at the edge of the network.
- The third part illustrates decentralized IoT applications based on distributed ledger technologies.
- The fourth part is devoted to the presentation of novel IoT applications and use cases spanning the cloud/edge/IoT continuum.
- The fifth part discusses complementary aspects of IoT technologies, including business models and digital skills.

Keywords: IoT, Internet of Things, Cloud Computing, Edge Computing, Artificial Intelligence, 5G, 6G, Blockchain, Distributed Ledger Technologies, AIoT, Machine Learning, Federated Learning, Tactile Intelligence