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Special Issue Reprint

Energy-Efficient Computing and Communication

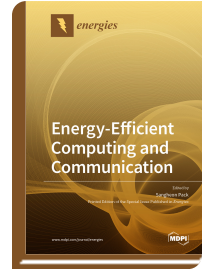
www.mdpi.com/books/reprint/2414

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ISBN 978-3-03936-148-9 (Softback)

ISBN 978-3-03936-149-6 (PDF)



Information and communication technology (ICT) is responsible for up to 10% of world power consumption. In particular, communications and computing systems are indispensable elements in ICT; thus, determining how to improve the energy efficiency in communications and computing systems has become one of the most important issues for realizing green ICT. Even though a number of studies have been conducted, most of them focused on one aspect—either communications or computing systems. However, salient features in communications and computing systems should be jointly considered, and novel holistic approaches across communications and computing systems are strongly required to implement energy-efficient systems. In addition, emerging systems, such as energy-harvesting IoT devices, cyber-physical systems (CPSs), autonomous vehicles (AVs), and unmanned aerial vehicles (UAVs), require new approaches to satisfy their strict energy consumption requirements in mission-critical situations. The goal of this Special Issue is to disseminate the recent advances in energy-efficient communications and computing systems. Review and survey papers on these topics are welcome. Potential topics include, but are not limited to, the following: • energy-efficient communications: from physical layer to application layer; • energy-efficient computing systems; • energy-efficient network architecture: through SDN/NFV/network slicing; • energy-efficient system design; • energy-efficient Internet of Things (IoT) and Industrial IoT (IIoT); • energy-efficient edge/fog/cloud computing; • new approaches for energy-efficient computing and communications (e.g., AI/ML and data-driven approaches); • new performance metrics on energy efficiency in emerging systems; • energy harvesting and simultaneous wireless information and power transfer (SWIPT); • smart grid and vehicle-to-grid (V2G); and • standardization and open approaches for energy efficient systems.

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