FPGA/GPU Acceleration of Biomedical Engineering Applications

Guest Editors:

Dr. Gabriel Caffarena

Dr. Madhav P. Desai

Dr. Ruzica Jevtic

Prof. Dr. Encarnación Castillo

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Message from the Guest Editors

Biomedical Engineering is one of the most active research fields. Traditionally, Bioinformatics applications were clearly in need of high-performance computing systems. However, in recent years, most biomedical applications have become data-hungry due to the thriving machine learning algorithms, as well as the increase in the data acquisition capabilities.

The use of microprocessors or microcontroller units for high-performance data analysis has severe limitations in terms of power consumption and throughput, so technologies oriented toward massive parallelization as graphics processor units (GPU) and field-programmable gate arrays (FPGA) are attractive and effective solutions acting as accelerators of applications. The former provides an extremely high level of parallelism while keeping a friendly software development system; as a drawback, power consumption is equivalent to that of high-end microprocessors. The latter allows for the design of optimal architectures with high parallelism, while the development times are in general notably increased.

Special Issue

Editor-in-Chief

Prof. Dr. Flavio Canavero
Department of Electronics and Telecommunications, Politecnico di Torino, 10129 Torino, Italy

Message from the Editor-in-Chief

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