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Advanced Data Acquisition and Intelligent Data Processing

Applications In Monitoring, Measuring and Diagnostics Systems

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DAQ and data processing is a basic part of all automated production systems, diagnostic systems, watching over quality of production, energy distribution, transport control or in various other areas. Demands on the speed, accuracy and reliability increase in general. It is possible to achieve not only using superior (but also more expensive) hardware, but also applying advanced data acquisition and intelligent data processing. It deals e.g. optimal data fusion of a number of sensors, new stochastic methods for accuracy increasing, new algorithms for acceleration of data processing, etc. These are the grounds for publishing this book.

Advanced Data Acquisition and Intelligent Data Processing offers 10 up-to-date examples of different applications of advanced data acquisition and intelligent data processing used in monitoring, measuring and diagnostics systems. The book arose based on the most interesting papers from this area published at IDAACS?2013 conference. However, the indivudual chapters include not only designed solution in wider context but also relevant theoretical parts, achieved results and possible future ways.

Technical topics discussed in this book include:

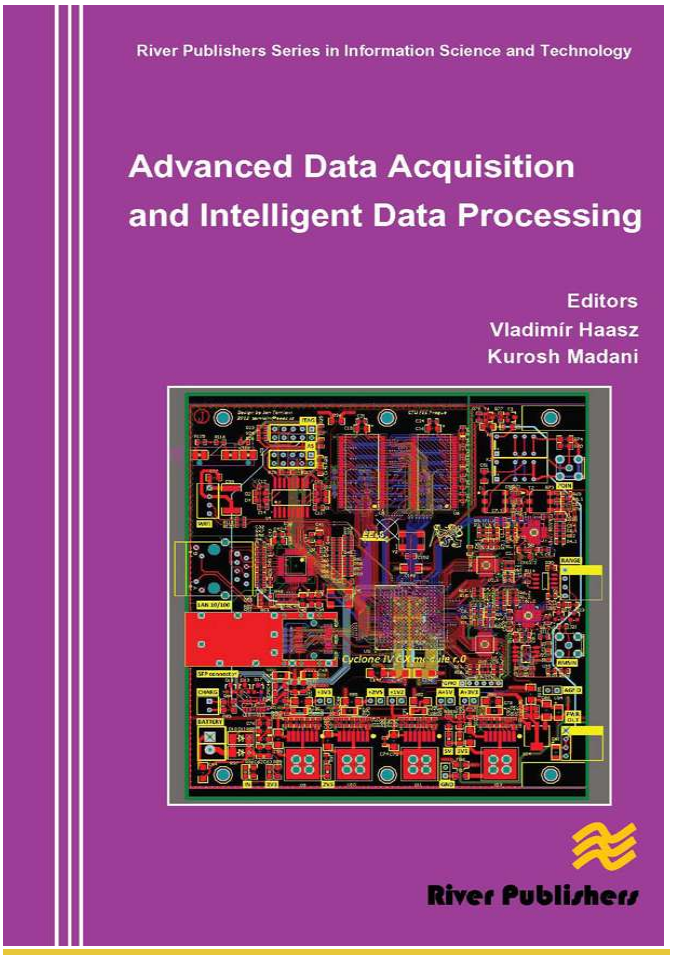
- advanced methods of data acquisition in application that are not routine;
- measured data fusion using up-to-date advanced data processing;
- nonlinear dynamical systems identification;
- multidimensional image processing.

Advanced Data Acquisition and Intelligent Data Processing is ideal for personnel of firms deals with advanced instrumentation, energy consumption monitoring, environment monitoring, non-descructive diagnostics robotics, etc., as well as academic staff and postgraduate students in electrical, control and computer engineering.

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KEYWORDS:
data acquisition, smart metering, sensor; sensor network; neural networks; adaptive neuro-fuzzy system, identification, prediction, correction, calibration, FPGA; linearization; nonlinear dynamic systems; polyharmonic signals; hyperspectral imaging;

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