

Foreword

This special issue on *Sensor Network for Building Monitoring: From Theory to Real Application*, is a timely and welcome addition to the knowledge base in the field of building monitoring. The subject of networked sensors has received increased attention in the context of monitoring and control of complex engineering systems for good reason. When the system complexity increases, a “distributed” approach to sensing will become more effective. Furthermore, when the number and the type of variables of interest become diverse it is unlikely that one or two sensors will be able to monitor them at high accuracy and reliability. However, sensor networks provide significant challenges as well. The operating environment, bandwidth requirements, power consumption, data acquisition considerations, signal processing needs, resolution, accuracy, and reliability are paramount in this regard. Furthermore, in the context of data transmission, a wireless approach has the edge when dealing with distributed sensors. Additional challenges are present when dealing with wireless sensor networks, however; for example, communication protocols, transmission delay, latency, and so on. I am delighted to see that the present special issue sufficiently addresses all these aspects of sensor networks, with the application focus of building monitoring.

I am honored to have been invited to write this foreword for the special issue of the journal. The Guest Editor has brought together a group of distinguished scholars and researchers from several disciplines and institutions, with the intent of advancing the technical knowledge in the subject of building monitoring using networked sensors. As needed, the selected papers primarily take an application emphasis. The coverage is sufficiently broad while the treatment is in depth where needed.

In my own laboratory (Industrial Automation Laboratory at UBC) wireless sensor networks are used to monitor multiple mobile robots and industrial machinery for fault detection, diagnosis, accommodation, and supervisory control. Going a step further, we are conducting research to develop methodologies of design evolution for engineering systems, using the same infrastructure and resources as normally used for machine health monitoring and control. After seeing the special issue edited by Dr. Malka Halgamuge I am convinced that similar technologies may be extended to building systems as well! I have no doubt that the present volume will lead to further insights, new research and developments, and increased practical applications in the subject area, thereby providing a valuable source of knowledge source for researchers, students, and practicing professionals alike.

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