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Multilevel Signal Processing for Biomedical Nanodevices

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Ubiquitous healthcare has become one of the prominent areas of research in order to address the challenges encountered in healthcare environment. Ubiquitous healthcare requires networks of intelligent sensor nodes that could be deployed “by all anywhere and anytime” and is a permanent part of the human presence. Management of systemic diseases via technology based ubiquitous patient monitoring services has been widely proposed as a viable option for economizing healthcare resources, and providing efficient, quality healthcare.

Ubiquitous sensors, devices and networks are paving the way towards a smart world in which computational intelligence is apply at all levels of the physical environment to provide reliable and relevant services to patients. This ubiquitous intelligence will change the computing landscape and environment around the patient, because it will enable new breeds of applications and systems to be developed and the realm of computing possibilities will be significantly extended. By enhancing everyday objects with intelligence, many tasks and processes could be simplified. The physical spaces where patients interact like the homes and hospitals could become more efficient, safer and more enjoyable. Ubiquitous computing, or pervasive computing, uses these many "smart things" to create smart environments, services and applications.

The Internet of Things is a new concept for telecommunication development. The Ubiquitous sensor Network is one of the general components of Internet of Things. A smart thing can be endowed with different levels of intelligence, and may be context-aware, active, interactive, reactive, proactive, assistive, adaptive, automated, sentient, perceptual, cognitive, autonomic and/or thinking. Research on ubiquitous intelligence is an emerging research field covering healthcare needs. A series of challenges exist to move from the current level of computing services in healthcare to the smart world of adaptive and intelligent services.