Multi-usage of microwave Doppler radar in pervasive healthcare systems for elderly

Publisher: IEEE

O. Postolache ; P. Girão ; E. Pinheiro ; R. Madeira ; J. M. Dias Pereira ; J. Mendes ; G. Postolach... All Authors

Abstract: Health assessment requirements for aging population have accentuated the need of ubiquitous and pervasive e-Health environments. Recently, new implemented embedded vital ... **View more**

Metadata

Abstract:
Health assessment requirements for aging population have accentuated the need of ubiquitous and pervasive e-Health environments. Recently, new implemented embedded vital signs sensors were joined to ubiquitous computation in order to materialize Ubi-Health systems with lower price and augmented interoperability in comparison with traditional clinical instrumentation for in house health status monitoring needs. The work reports the utilization of the smart sensor based on 24GHz microwave FMCW (frequency modulated continuous wave) Doppler embedded in smart objects such as wheelchairs, walkers or crutches used by elderly, that perform cardiorespiratory signs and physical activity monitoring. According to the requirements of sensor identification and wireless data communication between the smart sensor and the advanced signal processing, data logging and web publishing unit, a combination between Bluetooth MAC based identification and Virtual Transducer Electronic Data Sheet was implemented. The system allows vital signs and motor activity monitoring, including gait characterization.

Published in: 2011 IEEE International Instrumentation and Measurement Technology Conference

Date of Conference: 10-12 May 2011 **INSPEC Accession Number:** 12108488

Date Added to IEEE *Xplore*: 07 July 2011 **DOI:** 10.1109/IMTC.2011.5944313

ISBN Information: **Publisher:** IEEE

ISSN Information: **Conference Location:** Hangzhou, China

Contents

In the last time, in many countries, demographic developments, social changes, and the rising costs of health and social care - considering elderly population, people with chronic diseases, or people with less mobility -, were implemented various electronic health records systems [1] associated with pervasive healthcare systems [2] as more effective and cheaper way for clinical assessment. To change the health delivery model from doctor-centric to patient-centric, from acute reactive to continuous preventive, from sampling to monitoring [3] the pervasive healthcare systems requires new devices for vital signs monitoring that can be easily adapted to the user's house reality and commonly used objects.