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Enabling telecare assessment with pervasive sensing and Android OS smartphone

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    Software   **Abstract:**
                       Measurements of vital signs and behavioral patterns can be translated into accurate
V. Web Based   predictors of health risk, even at an early stage, and can be combined with alarm-
    Information   triggering systems in order to initiate the appropriate actions. The paper presents the
    System   design and implementation of a mobile TeleCare system based on a smart wrist-worn
                       device with a non-obtrusive sensing module for cardiac, respiratory and motor activity, a
Show Full Outline ▾ microcontroller platform for primary processing of the data from the sensors and
                       wireless communication using Bluetooth protocol. Advanced data processing, data
    Authors   management, human computing interfacing and data communication are implemented
                       using a smartphone running Android operating system (OS). A Web based health
    Figures   TeleCare information system was implemented being characterized by the following
                       functionalities: data synchronization with the smartphone, advanced data processing
    References   and data presentation assuring a comprehensive data analysis and evidence based
                       health management as well as for remote assistance of the patients by doctors and
    Citations   nurses. Experimental results associated with vital signs sensing and the software
                       implementation are included in the paper.
    Keywords

    Metrics

ISBN Information: **Publisher:** IEEE

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☰ Contents

I. Introduction

Demographic developments, social changes, and the rising costs of health and social care regarding people with chronic diseases and elderly population require, around the world, efficient utilization of physicians, reducing hospital stays and hospital readmission rate, reducing the skill level and frequency of visits of home-care professionals, and promoting health education [1] [2] [3]. However, efficient pervasive health care architectures, mechanisms and systems can alleviate the problem of supporting and caring for people with a long term condition and less mobility. Pervasive sensing [4] and computing [5] as main parts of ubiquitous healthcare systems, enable medical professionals to remotely perform continue monitoring, early diagnosis, and treatment for potential risky diseases [6]. At the same time, these systems provide to the users the possibility to perform biofeedback experience [7] and to diminish the stress regarding clinical assistance. Combining smart sensors [8] in wearable form (e.g. smart t-shirt) or embedded in daily used objects (wheelchair, for people with motor diseases) [9] [10] the personalized profile of the user's physical and physiological patterns can be analyzed in an unobtrusive way. Pervasive computing using smartphones express nowadays a common way to assure data management associated with in home TeleCare throughout a human-machine- interface (HMI).

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