**M S Ramaiah Institute of Technology**

An Autonomous Institute, Affiliated to

**Visvesvaraya Technological University, Belgaum**

# *Bachelor of Engineering in Computer Science & Engineering*

Submitted by

USN: 1MS12CS121 Student Name: Tejas P

USN: 1MS12CS043 Student Name: Nitish Kurgod

USN: 1MS12CS019 Student Name: B. Nishanth Varma

USN: 1MS12CS024 Student Name: Dasari Teja Sri Bhargav

Under the guidance of **Mrs. Geetha Reddy**

Verified By:

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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**M.S.RAMAIAH INSTITUTE OF TECHNOLOGY**

**(Autonomous Institute, Affiliated to VTU)**

**BANGALORE-560054**

www.msrit.edu

**Dual-Mode Wireless Sensor Network for Real-time Contactless In-door Health Monitoring**

**Abstract**

Due to the ageing population, real-time and autonomous health monitoring is an emerging priority in ambient assisted living. Current solutions suffer from critical limitations. In this project, a complete system for contactless health-monitoring in home environment is presented [2]. However, the existing sensors are either not practical for wireless implementation, does not have enough accuracy, or are not cost-effective. Hence we are implementing it in a more feasible way [4]. In this work, a wireless sensor network is proposed for home environments by which the sensors are dual- mode radars, enabling concurrent remote localization of a person and fall detection. We elaborate on the network architecture, and in particular on the signaling as to enable real-time data processing combined with radar-based wireless sensing.

The basic idea behind this project is to have a device in the patient’s side which records the health activities of him/her like heart rate, blood pressure among others and sends this information to the computer in any other geographical area which can be monitored by a doctor per se. This process is done by the micro controller which converts the analog signals which is received through the sensors in the device to digital signals. This signal which is the information at hand is communicated to the doctor’s side by Zigbee communication mechanism.

This is dual mode because the information of the patient can be made to see on the patient’s side using an LCD display as well as on the doctor’s side. And it’s real time because the information which is taken by the device is communicated as and when it is received which helps to avoid life threatening situations.

Index Terms are contactless, fall detection, movement classification, radar remote sensing, real-time health monitoring, tagless positioning, trilateration, WSN, Zigbee communication.

**Components**

* DC Bias Supply
* Microcontroller
* RF Switch
* Wilkinson Divider
* IQ Mixer
* Baseband filters and amplifiers

**References:**

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