SMART CANE FOR ALZHEIMER's PATIENT.

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Abstract - Our project aims to tackle the difficulties faced by the Dementia patients. Most common form of dementia is the Alzheimers disease.

The position tracking of everyday objects for Alzheimer patients and old age homes is a system which will track the lost objects of Alzheimer patients and elderly people. This system uses RFID technology for the detection of their lost objects. All the object sensors and object indicators are interfaced to Peripheral interface control (PIC) Microcontroller to which RFID Scanner is also connected. Microcontroller is used to control all the blocks of this system. The Global Positioning System (GPS) is an accurate positioning system. The GPS has an accuracy that varies from 4mm up to 11m.

This project in lieu of thesis investigates the state of art of the GPS navigation and positioning for outdoor and indoor environments with a particular focus to the outdoor applications. All the hardware system is connected to an Android (OS) mobile phone with the help of Bluetooth module. This system is able to display exact location of the lost object on a display device (Here were using Android device).

Keywords – Dementia, Alzheimer ,RFID Scanner ,GPS navigation and Android

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I. INTRODUCTION

Alzheimer's is the most common form of dementia, in which the mental ability of a person declines and gradually reaches a stage where it becomes difficult for them to lead a normal life. It is an incurable disease with a long and progressive course. In India, there are more than 50 lakh people suffering from dementia, of which nearly 80 percent have Alzheimer's. According to doctors, this number is expected to double by 2030. Once we visited an old age home. We observed that many old people were tending to forget the things that they've placed. It was very difficult to find those lost objects to the staff of the old age homes. We decided to make the indoor and outdoor position tracking system.

Alzheimer's disease is an irreversible, progressive brain disorder that slowly destroys memory and thinking skills and, eventually, the ability to carry out the simplest tasks.

In most people with Alzheimer's, symptoms first appear in their mid-60s. Alzheimer's disease is the most common cause of Dementia among older adults.

A lot of activities become difficult for these patients. With loss of memory, it is very strenuous for the patients to perform day to day activities.

II.RELATED WORK

Eric Dishman and Maria C. Carrillo.

"Perspective on everyday technologies for Alzheimer's care: Research findings, directions and challenges.":- The Everyday Technologies for Alzheimer's Care (ETAC) initiative was launched by the Alzheimer's

Association and Intel Corporation in 2003 to identify and fund promising research in the use of technology—especially information and communication technologies (ICTs)—for monitoring, diagnosing, and treating Alzheimer's disease (AD). Agilent Technologies joined the initiative in 2005. In October 2006, representatives of the three partners, together with ETAC award grantees, met to review the most recent research, and discuss how current and developing technologies can address growing needs in Alzheimer's care. [1].

Kouji Murakami, Kazuya Matsuo, Tsutomu Hasegawa, Ryo Kurazume, "Position Tracking and Recognition of Everyday Objects by using Sensors Embedded in an Environment and Mounted on Mobile Robots":-We propose an object tracking system for a service robot working in an everyday environment. The system is composed of an intelligent cabinet, a floor sensing system and a data management system. The position of an object can

be classified into three areas: 1) in/on furniture, 2) on the floor, 3) held by a human or a robot. Being equipped with a RFID reader and loadcells, the intelligent cabinet measures the position of an object in/on itself. The floor sensing system which uses a laser range finder, measures the position of an object on the floor and the position of a human walking in

a room. The data management system integrates the position data of the intelligent cabinets and the floor sensing system, and it performs position measurement of an object carried by a human. The data management system provides robots with position information to support robot activities. [2].

Astur RS, Tropp J, Sava S, Constable RT, Markus ET." Sex *differences in a* virtual Morris water task and a virtual eight-arm maze. Behav Brain Res 2004;151:10315.:-Different tasks are often used to assess spatial memory in humans compared to nonhumans. In order to bridge this paradigmatic gap,

we used a within-subject design to test 61 undergraduates on three spatial memory tasks. One of these tasks, the Vanderberg 3D mental

rotation task, is classically used to assess spatial memory in humans. The other two tests are virtual analogues of two tasks used classically

to assess spatial memory in rodents: the Morris water task and an eight-arm radial maze. We find that males perform significantly better

than females on the mental rotation task and in finding a hidden platform in the virtual Morris water task. Moreover, during a probe trial, males spend significantly more distance of their swim in the training quadrant, but males and females do not differ in navigating to a visible platform. However, for the virtual eight-arm radial maze, there is no sex difference in working memory errors, reference memory errors, or distance to find the rewards. Surprisingly, an examination of the correlations among the

three tasks indicates that only mental rotation ability and Morris water task probe trial performance correlate significantly among the three tasks (i.e. there are no significant correlations

with traditional measures the tasks, e.g. time or distance to completion). Hence, the Morris water task and the eight-arm radial maze do not assess spatial memory in the same manner, and even after equating factors such as motivation, stress, and motor demands, there still

are procedural demands of the tasks that reinforce differential strategy selection during spatial memory. This suggests that caution should

be taken when utilizing these two tasks interchangeable as tests of spatial memory[3].

III. PROBLEM STATEMENT

To develop a system for generating electric power through waste energy that is created due sound pollution and pressure exerted by humans, vehicles and different things on various surfaces in day to day activities. To develop the system that converts sound and pressure energy into electric energy or other form of energy. Interface the piezoelectric sensor, relay, all this devices with Microcontroller.

IV. METHODOLOGY

The present control system uses a smart phone based GPS tracking which is not efficient due to the following reasons: An Alzheimer's patient can easily forget carrying the device. Families have to rely on the device. Single Person handles the

Circuit. No provision for indoor object tracking.

The design and implementation stage of the project, involved the Bluetooth embedded hardware device implementation and the software application development for Android. The Bluetooth embedded device is a microcontroller based system.

PIC microcontroller is a small computer on a single integrated circuit consisting internally of a relatively simple CPU, clock, timers, I/O ports, and memory. Microcontrollers are used in automatically controlled products and devices.

Microcontrollers are designed for small or dedicated applications. By reducing the size and cost compared to a design that uses a separate microprocessor, memory, and input/output devices, microcontrollers make it economical to digitally control even more devices and processes.

V. REFERENCES

1. Eric Dishman and Maria C. Carrillo.
    "Perspective on everyday technologies for Alzheimer's care: Research findings, directions and challenges."
    1552-5260/07/$
    2007 Alzheimer's Association.

2.   Kouji Murakami, Kazuya Matsuo, Tsutomu Hasegawa, Ryo Kurazume,
    "Position Tracking and Recognition of Everyday Objects by using Sensors Embedded in an Environment and Mounted on Mobile Robots",

978-1-4244-6676-4/10/$25.00 ©2010 IEEE Proc. IEEE International Conference on Robotics and Automation, pp.2010-2016, Saint Paul, Minnesota, USA, May 14-18, 2012

3. Astur RS, Tropp J, Sava S, Constable RT, Markus ET. Sex differences in a virtual Morris water task and a virtual eight-arm maze. Behav Brain Res 2004;151:10315.