Pedestrian Tracker Using Gyrosensor

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Abstract- *This 'PEDESTRIAN TRACKER USING GYRO-SENSOR' project aims at tracking indoor positioning as well as providing navigational assistance to the pedestrian. The gyro sensor used in this project is efficient than any other method. In this project ATmega uses I2C to interface with Gyro sensor (MPU6050). The output of the sensor is used to interface with Atmega328P to get the axis co-ordinates using wifi module(ESP8266). Here, we have developed the indoor navigation system based on PDR (Pedestrian Dead Reckoning)*

Keywords- MPU6050, ATMEGA328P, ESP826, DEAD RECKONING

I. INTRODUCTION

For outdoor navigational assistance the use of GPS can be considered as the best system worldwide but, to track down the person for the indoor navigational assistance is a challenging task. Various indoor pedestrian navigation systems, such as WiFi localization, radio frequency identification (RFID) have been developed, but how to achieve accurate and seamless navigation at less cost is still a challenging task. Most existing technologies depends on some form of dedicated infrastructure, which is expensive and always not continuously available during pedestrian walking. When the user related walking distance per step are obtained, the user location can be determined by computing relative displacement, starting from the initial location that is assumed to be known or set a point as a reference point.

We faced the head estimation problem with the another methodology used, to avoid such problems there is a use of gyro sensor which gives efficiency and solve the problem. Gyro sensor is particularly used to maintain the accuracy.

II. LITERATURE SURVEY

We can use various techniques for indoor navigation.
Tracking is usually done in many ways many of them are, indoor tracking system using Bluetooth technique, Location providing technique for self-location tracking using smartphone, pedestrian tracking system with sensor nodes

A. Indoor Tracking System Using Bluetooth

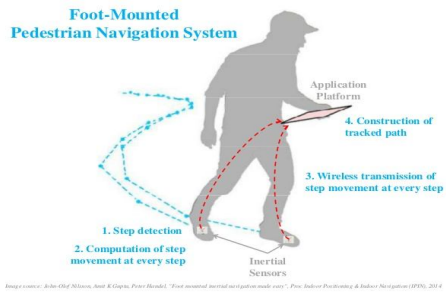
Bluetooth system needs additional hardware, Bluetooth adapter, for the purpose to find the location which increases the cost of the system

In tracking system with nodes the sensor nodes are placed at the gates and microcells are formed. This system only keeps the track of pedestrian only at nodal points.

In this approach we examined about how the indoor system works wirelessly in limited range. This technique depends on additional hardware and the cost also increases tremendously.

. B Indoor Tracking System Using Dead Reckoning Method

In this technique, nodes are placed at the gates and monitoring region divided into many microcells. This focuses on pedestrian tracking in building where multiple pedestrains move. It faces head estimation problem and is expensive



The method used by us to overcome the drawbacks of the above mentioned systems is mentioned below:

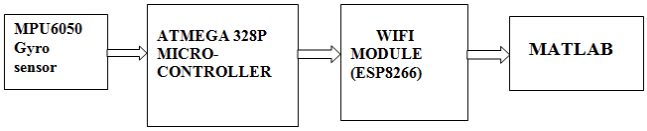
"PEDESTRIAN TRACKER USING GYRO SENSOR"

In this very own technique we used Gyro Sensor MPU 6050 for the system.

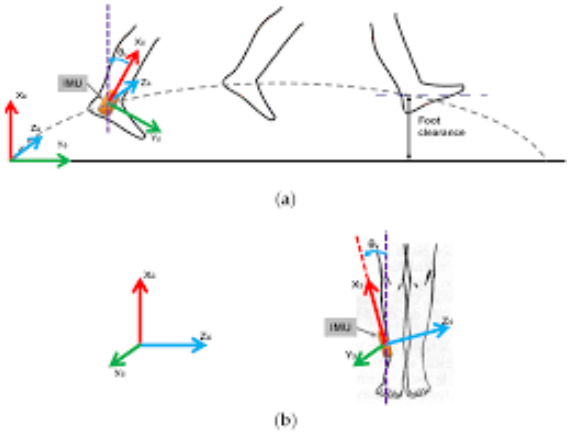
The MPU6050 is interfaced with the ATmega328P (microcontroller) at the I2C Serial Communication pins.
I2C is a two-wire interface comprised of the signals serial data (SDA) and serial clock (SCL). In general, the lines are open-drain and bi-directional.

MPU6050 always operates as a slave device when we communicate through system processor

The output of the sensor is a 9 axis Fusion Output.



This output is converted into 3 co-ordinate axes Viz X,Y,Z respectively. This output in the form of axes is transmitted using WIFI module ESP8266 to the Matlab and the position of the tracker is displayed.



III. CONCLUSION

The system is placed at the foot of the tracker. The exact position of the tracker is obtained by the Gyro Sensor MPU6050 in three coordinate axes viz. X,Y,Z axes. This information is displayed on Matlab with the help of WIFI module ESP8266 . Thus a low cost indoor navigation system solving the exsisting head estimation problem is developed.

IV. ACKNOWLEDGMENT

Vedashree Kulkarni, Shruti Pardeshi(Awathi), Pranati Chavan are
Thankful to the MITCOE, Pune for the lab facility.

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