AENSI Journals

Australian Journal of Basic and Applied Sciences

ISSN:1991-8178

Journal home page: www.ajbasweb.com

Intelligent Caddy Robot using Autonomous Tracking System

M. Tarmizi, I. Zunaidi, M. Luqman, A. B. Samat, W. Zulkarnain

Faculty of Automation & Engineering Technology, TATI University College, 24000Terengganu, Malaysia

ARTICLE INFO

Article history:
Received 20 November 2013
Received in revised form 24 January 2014
Accepted 29 January 2014
Available online 5 April 2014

Keywords:
GPS Navigation; Digital Compass; Wireless; Autonomous Tracking System

ABSTRACT

Nowadays, golfers will carry their golf bags with trolley manually to the place where the golf ball was hit. Here, the Intelligent Caddy Robot (ICR) is proposed to reduce the load carry by the golfers. The robot was developed by using GPS system use to locate the robot and the golfer position. By combining the GPS signal received and digital compass, the robot is able to determine the position of the golfer. The focus of the project is to navigate the ICR based on golfer GPS coordinate given to the ICR through wireless communication. ICR is designed to be used at golf course to carry golf bag.

To Cite This Article: M. Tarmizi, I. Zunaidi, M. Luqman, A. B. Samat, W. Zulkarnain., Intelligent Caddy Robot using Autonomous Tracking System. ***Aust. J. Basic & Appl. Sci.,*** *8(4): 863-864, 2014*

INTRODUCTION

Nowadays, golfers will carry their golf bags with trolley manually to the place where the golf ball was hit. Here, the Intelligent Caddy Robot (ICR) is proposed to reduce the load carry by the golfers based on three objectives. First objective is implementing a system that can track a golfer autonomously using GPS coordinate system. ICR can track user by getting a coordinate of user. Second objective is to produce an alternative way to carry a golf bag. Compare to conventional method, here golf bag automatically follow the golfer. Third objective is to develop an Intelligent Caddy Robot for golfer. The ICR can make decision to follow the golfer using the coordinate position automatically. If the user coordinate is within or below 5 meter, ICR will stop. Previous work related to this project in term of obstacle avoidance can be refer to (Zunaidi Ibrahim *et al*., 2005; Zunaidi Ibrahim *et al*., 2006).

MATERIALS AND METHODS

ICR is working based on the Fig. 1 below which summarizes the tracking and movement process. Firstly, satellites acquire and send the coordinate to ICR and user. Secondly, ICR get the user coordinate through wireless from user. Lastly, ICR assisted with electronic compass move towards user.

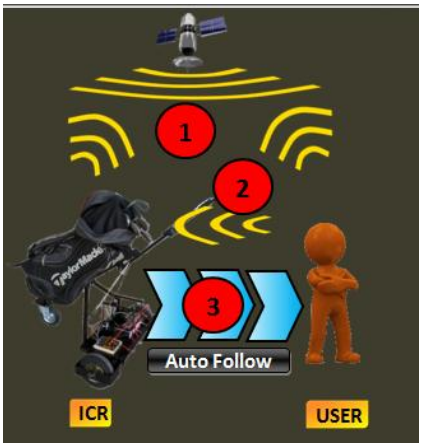

Fig. 1: ICR navigation process.

Corresponding Author: M. Tarmizi, Department of Electronic & Instrumentation, Faculty of Automation & Engineering Technology, TATI University College, 24000 Terengganu, Malaysia.
E-mail: tarmizi@tatiuc.edu.my

Australian Journal of Basic and Applied Sciences, 8(4) Special 2014, Pages: 863-864

For navigation process, the movement operation is depending on the two wheels which are left and right motor. From the coordinate of ICR and user, the movement for left and right motor is calculated. The process is shown in Fig. 2.

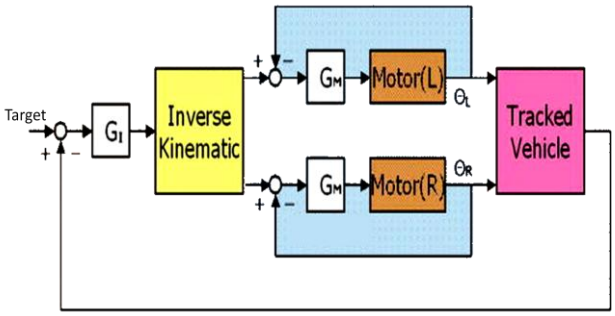

Fig. 2: ICR movement block diagram.

RESULT AND DISCUSSION

The ICR is able to locate and move towards user under a cleared sky. It will only move when the user distance is about more than 5 meter from ICR. If the big obstacles like building or the ICR is inside building, the GPS signal is come weak then makes the coordinate is not updated. ICR will stay at last working coordinate both for user and ICR itself.

Usually the golf field has no big obstacle like building and also the golf is play during a good wheather which can result in good GPS signal reception. So this made ICR is suitable in golf Field ad alternative way to carry golf bag.

Conclusion and Future Works:

The project shows that the navigation of autonomous robot is possible by using GPS assisted with electronic compass. This project also gives an alternative for golfer to a carry golf bag which can reduce their load during golf session. The ICR ability to detect an obstacle by using a camera will be taken into account to cover the weakness of GPS. The replacement of current GPS coordinate transmitter with a Smartphone application like Android will be considered for the upcoming research.

REFERENCES

Zunaidi Ibrahim *et al*, 2005. "Path Planning based on Geographical Features Information that considers Moving Possibility of Outdoor Autonomous Mobile Robot." KINTEX, ICCAS, Korea.

Zunaidi Ibrahim *et al*., 2006. "Path Planning Algorithm-How to Evaluate the Difficulties of Moving in Various Environment.". Trans. of Society of Instrument & Control Engineers, 42(2): 164-173.

Zunaidi Ibrahim *et al*, 2006. "Positioning System for 4-Wheel Mobile Robot: Encoder, Gyro and Accelerometer Data Fusion with Error Model Method." CMU Journal, 5: 1.