INTEGRATIVE APPROACH OF VOICE AND GESTURE RECOGNITION FOR INTERACTIVE ROBOT

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ABSTRACT: The instructing technique is never again reasonable for the creation mode with human – robot cooperation. A web based showing technique with the combination of discourse and motion, this application is described by the educator to control the robot camera based video data or using MEMS hardware interface using Zigbee – voice heading can be seen using Android application. The training procedure is never again sensible for the creation mode. An electronic appearing with the blend of discourse, change of the endeavor is to teach the robot to compose by giving three evident sources of information like Voice direction, Camera based information or utilizing MEMS equipment interface utilizing Zigbee. Voice direction can be perceived utilizing android application.

KEYWORD: IoT, Hand gesture, Voice recognition, Camera detection.

1. INTRODUCTION

The advancement of industry 4.0, robots later on will in general be smart, multi-functionalized and shared. The joint effort robot can cooperate with people in a typical space to achieve basics undertakings. Thus, it is basic to comprehend the correspondence among individuals and robots. With the landing of the time of insight, people started to anticipate the more elevated amount of interest for acute innovation, which drives robots to create towards bearing of insight and expansion. Human robot collaboration is a developing field in the examination of robot innovation. The reason and establishment of the human PC collaboration innovation are the robot instructing and playback innovation, which implies that human show robots learning somehow or another. The robot has the capacities of getting the hang of, recollecting and seeing, which coordinated the advancement after effects of numerous order. At present, most regular human-robot communication techniques utilize at least one common approaches to cooperate with robots. During the time spent the errand execution, robots can speak with people in intelligent routes, for example, discourse, eyes and motions. Structured a little accomplice robot for maturing issue. Client can utilize motion and voice to converse with a robot. The inside for computerized reasoning exploration proposed a multi-channel combination technique dependent on weight. Voice and signals can be utilized as the information streams, and the yield the combination data.

2. RELATED WORK

[1] Niko Herakovic In modern industrial assembly and quality control processes, that provide one of the crucial factors for the competitiveness of industry in general, there is a strong need for advanced robot-based object detection and recognition, object grasping and for the capability to perform assembling operations in non-structured environments with randomly positioned objects. Vision-based
robotic assembly and quality control systems, that have been a topic of continued research interest for almost four decades, have now matured to a point where they can be effectively applied to advanced robot-based assembly and quality control tasks. This chapter will give an overview of research work related to the field of automated vision systems for assembly and quality control processes. [2] Atul Mishra, Sudipta Bhuyan, Shashwat Agrawal, Sankha Deb and Debashis Sen Robotics offers a flexible automation technology for turning assembly systems into efficient and flexible manufacturing systems. The traditional method of manually generating the task level plan for robotic assembly is very tedious and time consuming. It will be beneficial if the task level planning can be automated. The current paper presents our ongoing research work on developing a to automate the generation of task level plan for robotic assembly. The implementation of the above has been shown by using a system involving a industrial robot manipulator. [3] Keum-Bae Cho and Beom-Hee Lee This paper addresses the introduction of a new Human Robot Interaction (HRI) sensor for guide robots. Guide robots for geriatric patients or the visually impaired should follow user’s control command, keeping a certain desired distance allowing the user to work freely. Therefore, it is necessary to acquire control commands and a user’s position on a real-time basis. We suggest a new sensor fusion system to achieve this objective and we will call this sensor the “intelligent lead”. The objective of the intelligent lead is to acquire a stable distance from the user to the robot, speed-control volume and turn-control volume, even when the robot platform with the intelligent lead is shaken on uneven ground. In this paper we explain a precise Extended Kalman Filter (EKF) procedure for this. The intelligent lead physically consists of a Kinect sensor, the serial linkage attached with eight rotary encoders, and an IMU (Inertial Measurement Unit) and their measurements are fused by the EKF. A mobile robot was designed to test the performance of the proposed sensor system. After installing the intelligent lead in the mobile robot, several tests are conducted to verify that the mobile robot with the intelligent lead is capable of achieving its goal points while maintaining the appropriate distance between the robot and the user. The results show that we can use the intelligent lead proposed in this paper as a new HRI sensor joined a joystick and a distance measure in the mobile environments such as the robot and the user are moving at the same time. [4] SUN XiaoLiang, JIA LiMin, DONG HongHui, QIN Yong1 & GUO Min The accurate and timely traffic state prediction has become increasingly important for the traffic participants, especially for the traffic managements. In this paper, the traffic state is described by Micro-LOS, and a direct prediction method is introduced. The development of the proposed method is based on Maximum Entropy (ME) models trained for multiple modes. In the Multimode Maximum Entropy (MME) framework, the different features like temporal and spatial features of traffic systems, regional traffic state are integrated simultaneously, and the different state behaviors based on 14 traffic modes defined by average speed according to the date-time division are also dealt with. The experiments based on the real data in Beijing expressway prove that the MME models outperforms the already existing model in both effectiveness and robustness.

3. PROPOSED SYSTEM METHODOLOGIES
A. USER INTERFACE DESIGN

Fig.3.1 In this module we depict around two distinctive structure display. One is for face acknowledgement and another is android configuration page.
Fig:3.1 User interface

Utilizing MATLAB we plan the face acknowledgement module to catch the motion by means of PC. What’s more, for versatile application we plan a UI to perceive the voice order in android application.

B. GESTURE RECOGNITION

Fig:3.2 Gesture Recognition

Fig:3.2 We train the PC to perceive the motion which is given by the client. In this view of signal, robot will perceive the motion and react dependent on that like forward, in reverse development. For this we use PCA calculation to recognize the sort of motion given by client.

C. ANDROID VOICE COMMAND

Fig:3.3 Android voice

Fig:3.3 Client will give direction through versatile application as a voice. In light of voice direction robot will react.

D. HARDWARE INTERFACE:
Fig:3.4 Hardware Interface

Fig:3.4 Implanted equipment gadgets is built utilizing PIC board and MEMS sensor. MEMS sensor is a wired gadget to perceive the development that is tilting of wire by directly to left, left to appropriate, forward to in reverse and in reverse to advance. For this additionally we will prepare the robot to react dependent on shaking of mems.

E. WRITING ROBOT

Fig:3.5 writing Robot

Fig:3.5 In view of voice order and signal robot will compose a solitary character and for correspondence we use zigbee which is remote correspondence to speak with robot.

4. SYSTEM ARCHITECTURE

Right off the bat we will make an android application and give voice as information like single word or a letter. The equipment setup comprises of a little robot, pen and a composing pad. The application will consequently perceive the word or letter from google and it will one character at any given moment through zigbee.
5. ADVANTAGES

[1] Without labor, the visually impaired individuals can compose their tests with the assistance of robot.

[2] Utilizing zigbee, the robot can without much of a stretch comprehend the voice order and signal and the robot will effectively perceive the info and compose accurately utilizing the zigbee.

6. CONCLUSION

The objective of our project is to set up the robot for flag affirmation and make the letter reliant on voice affirmation. Along these lines, the paper deduce that through the man-made consciousness we are actualizing the mechanical autonomy to compose the letters dependent on voice directions and make robots to push ahead and in reverse based MEMS. It displays an online robot instructing framework. AVFT was proposed to combine the discourse and the hand signal. The most outrageous entropy figuring was used to change the substance into the rules. The interface could be contacted. By using movement and talk, heads can control the robot without complex assignments. The system can energize two network situated controllers using two hands successfully.

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