SMALL SURVEY VEHICLE USED ANDROID OPERATING SYSTEM CONTROL

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Abstract

This paper used a survey design, small ground control systems on mobile devices. To facilitate the live environment, and can be controlled remotely through the operating system Android in case the user cannot access the survey area. Work on the pictures to conform to the presentation live and face recognition. The angle of the camera is pointing in the same direction. Making it easy to use, uncomplicated. The recorded images can save the image or facial recognition will have to take up space on the memory card will be the management of Raspberry Pi. The ground survey vehicle driven by a control system on mobile devices. This system is controlled by Android works with L298n, ESP8266 in the camera is used in two modes, a live performance by auto. In this mode, the environment around the vehicle. This mode is automatically enabled after a small survey vehicle ground control systems on mobile devices. Another mode is the face recognition function more like a person in front of the camera will be able to make precise and accurate face recognition. And also can control the rotation angle camera to display a live image and face recognition accuracy and independence.

Keywords— Small survey vehicle, Face recognition, Android operation

INTRODUCTION

Small vehicle applications generally present in the form of a variety of applications. The system is used there as well. Regulatory systems with Bluetooth, wireless, radio network, flammable. The objective of the implementation is different, for example, a competition to identify the metal objects to explore. Explore suspicious objects Rangers rescue the movement. The principle generally use power from DC voltage to power and electric motor with a 6-12 volt control the direction and speed of a vehicle. The drive controls are used in conjunction with an electronic circuit system activated by remote control. And automatic control devices, sensors and micro controllers with transducer. For example, sensors, lighting, sound, vibration, ultrasonic.

However, the vehicle radio and automatically enforce those restrictions to the functions and applications such as the ability to run on the steep road for some categories. Distance control is no more than 200 meters and there is a need within the controller must be able to see the car that force. Concept Development Explore the small car, ground control systems on mobile devices. Is developing a car that can be controlled by remote control, more control can be seen, the car and its surroundings through the display of Android, including the development control devices driven by The Raspberry Pi with Ono's view. The ability to monitor and process information. A more sophisticated Also included is driven to develop a working model and ordering easy.

OVERALL SYSTEM PERFORMANCE

A. The connection system

The system works by using an application on Android via Wi-Fi. To control motors and servo motors by using a Node MCU

ESP8266 pickup and send it to the board Drive Motor module L298N to power. Ground survey control circuit controlled by a small mobile operating system designed by pulse width modulation (PWM) signal, which is triggered to module L298N As a result, the motor speed to vary. Then we can adjust the speed of a DC motor by adjusting the width of the pulse signal to control the speed of the vehicle, we can control the speed of exploration ground control systems small mobile operating needs.

Application Android system works using a Wi-Fi receiver and sent to the Node MCU ESP8266 for the control of DC motors using 2 motors with Drive Motor L298n to front-wheel drive and rear wheel using. 3 actuators and servo motors, servo motors, one at the steering left - right. For front wheel the second servo motor is used to adjust the angle deviation of the left and right camera angle 0-180 degrees servo motor is used to adjust the angle - Tilt the camera from horizontal angle of 0-90 degrees. The control circuit ground survey vehicle with a control system based on mobile design Pulse width modulation (PWM) signal, which is triggered to L298N As a result, the motor speed to vary. We can adjust the speed of the electric motor as direct current. By adjusting the width of the pulse signal to control the speed of the car, we can control the speed of exploration ground control systems small mobile operating needs. The motors by Node MCU ESP8266 given up and sent to the board Drive Motor L298n to supply power to the DC-Motor control programming with micro controller board. Similarly, the servo motor control board with a micro controller. The image is a block diagram of a servo motor is used to adjust the camera angle, high-low, left-right by Servo Motor, which has 3 red line plus 5 volt from regulator circuit, line black wire removed GND line and Yellow line Data.
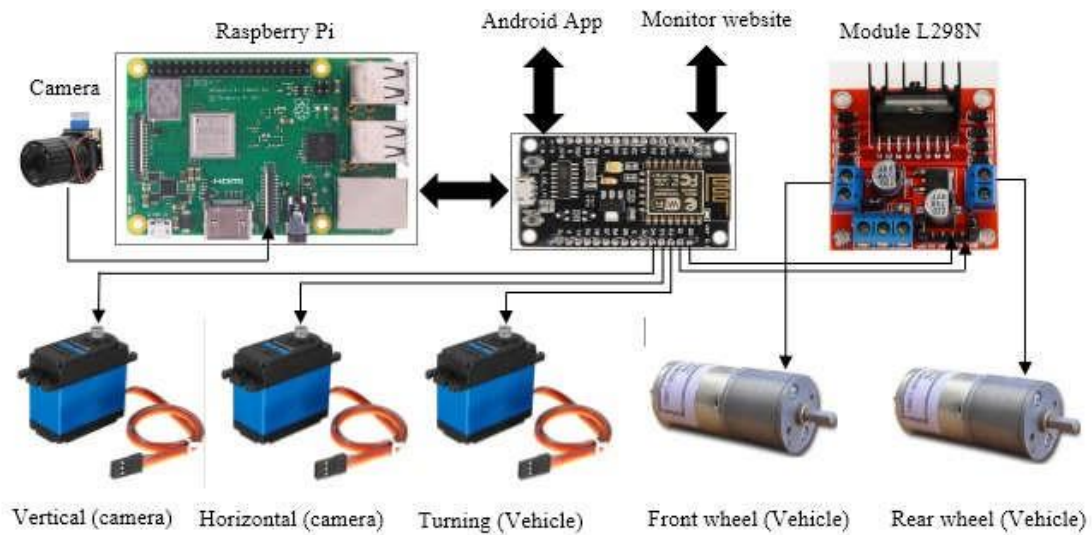
Fig. 1 Overall system performance

B. The camera works

In designing system of cameras to stream video and face recognition. Power supply from the main battery voltage of 5 volts, 1 ampere the Raspberry Pi is a major contributor to the Raspberry Pi Camera by connecting the CSI Camera Port and visual signals for output to HDMI Video Out for display streaming video. Similarly, be record the video shown to SD Card In addition,

the Raspberry Pi has also served as a device to connect to the Internet to send a signal to the device smart phone in real time for use with the program tracking and face recognition. All the data will be used to analyze the results and all data in the network.
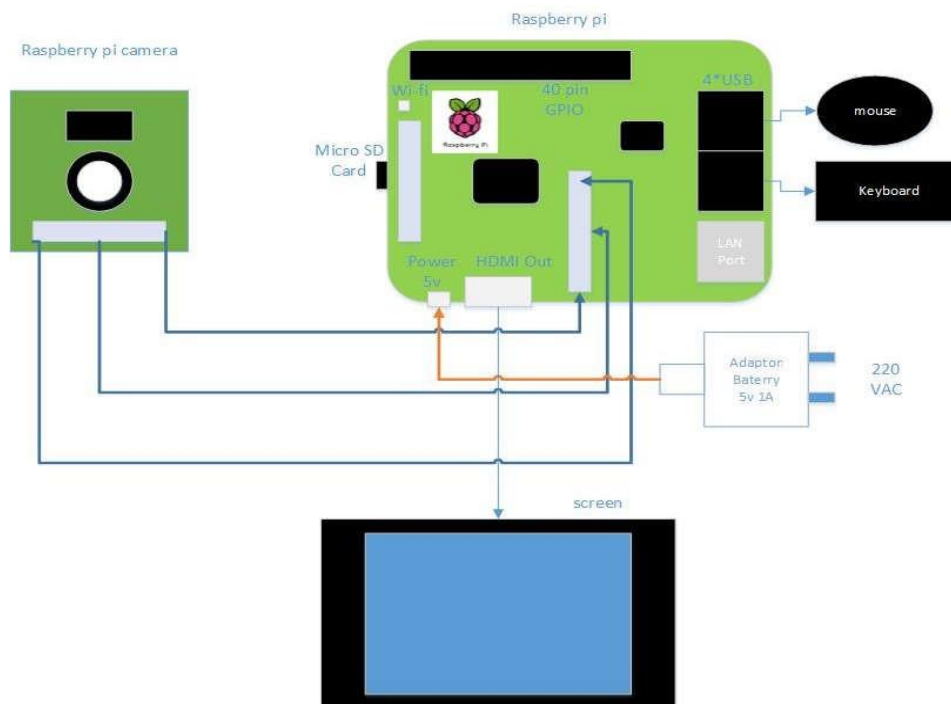

Fig. 2 camera works

C. Mobile Operating System

An application on Android via Wi-Fi to control the motor by using a Node MCU ESP8266 pickup and send it to the L298n (Drive

Motor. The DC motor and servo motor application on Android (Application Android) via Wi-Fi to control the motor by using a board Node MCU ESP8266 pickup and send it to the board Drive Motor L298n to power. The motor works And a servo motor
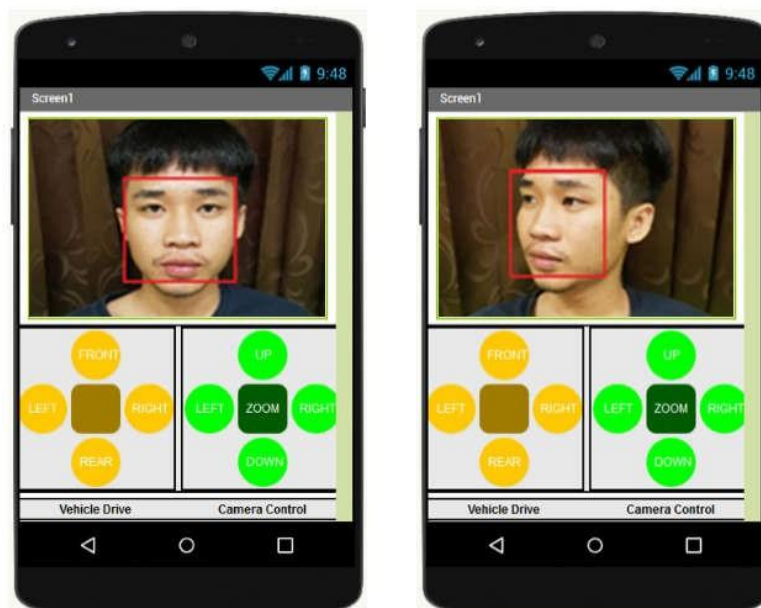
Fig. 3 Mobile Operating System

EXPERIMENT AND ANALYSIS

The experimental vehicle exploring a land controlled by the operating system on mobile devices. What is needed is an experiment the system of DC motor control circuits. And operation of the camera system the working set is equipped sideline. Each piece of equipment has to be tested for voltage and current coordinates in the actual work. And defective work. The details are as follows. To determine the accuracy of the test Forward – Backward, Turn left - right explore the small car, ground control systems on mobile devices. To test the effectiveness of the control circuit ground survey of small controlled by the operating system on mobile devices. The face recognition system in different ways. The test for the power (P) and signal to noise ratio (SNR).

A. Performance testing in motion

The ability to move forward - backward and turn left - turn right. Ground surveys of small controlled by the operating system on mobile devices. The experiment was divided into five phases: 50 meters, 100 meters, 150 meters, 200 meters and 250-meter freestyle at the trials, divided into linear motion and movement, avoid obstacles were forced to move forward. Explore the agility of the small survey vehicle can be easily controlled to a great extent. The reverse has also caused some problems. Due to the force of dodging obstructions. Requires the expertise of a person including forced through the screen smart phone difficult to use than the traditional lever joystick.

How to test the efficiency of exploration ground small controlled by the operating system on mobile devices that will be conducted by means of propulsion. Small survey vehicle in the pressure and the whip to be used in each trial had to be used to determine the effectiveness of a millimeter, a stopwatch and a tape measure distance when preparing to make the efficiency of exploration.

Then start testing by a vehicle driven by exploration. When the test is complete, then the value is added to the test for a performance.
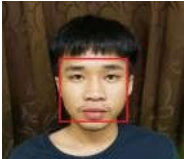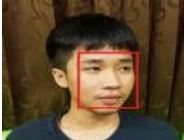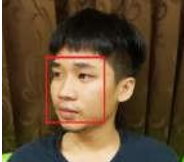
B. The face recognition system in different ways

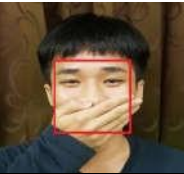System test results it was found that Image to be processed is accurate picture straight Accuracy equal to 95.1% due to the characteristic best. Skew the left and right tilt. It provides similar Accuracy percentages were 87.2% and 87.3%, due to the face that looks similar and can be classified individually as well. In the mouth closed case it can process the equivalent of 74.5% Accuracy can also be classified as the same person. Finally, the people in eyes closed by hands, blindfolded them. An accuracy percentage of 60.72% Accuracy least because of obstructions to cover the eyes and face. As a result, a feature that is missing a hand and part of face to hide the color of human skin. Turkish border make the search more broadly. As a result, a search area with more mistakes.

C. The efficiency

To test the effectiveness of the control circuit of travel surveys, ground small controlled by the operating system on mobile devices. By measuring the voltage and current to calculate the total power used. Power supply from the battery. DC voltage of 7.4 volts and 13.2 amps to power all 97.68 watts of load calculation of Small Survey Vehicle use electric power for a total of 8.9 watts when calculating energy costs while not counting the losses in the system. Available for up to 650 minutes and Ahmadinejad trial actually 10 times the average duration of work at the 618-minute show that effective control circuit to drive. 95.08% of the title when calculating the Signal to Noise Ratio (SNR) is equal to 20.35 dB means quality applications very well.

Table 1 Accuracy in separating human faces

Sample Test	Attitudes of face	Accuracy	Test Result
	straight	95.1%	
	left tilt	87.2%	
	right tilt	87.3%	
	mouth closed	74.5%	
	eyes closed	60.72%	

CONCUSTION

Exploration and development of vehicle control, powered by Android works with NODE NCU ESP8266 can recognize faces. Through a process of image processing of the work of Raspberry Pi works with Raspberry Pi Camera via Camera Serial Interface (CSI) and can record to SD Card from data analysis, performance summary of exploration ground Small-controlled operating system. The mobile can be seen from the table to test the efficiency of exploration and survey of building a car. A properly sized for the application. Control and speed control of electric motors act on it. And can see the environment around the vehicle and can also face recognition using the camera Raspberry Pi. Survey results for the experimental vehicle built. The results appear to have been targeted by the manufacturer is. To fix it in place, or to channel human inaccessible. The analysis from the survey feedback on the performance of students, a total of 20 people have tested and used to design and build a car to explore the land of small controlled mobile operating there. The satisfaction of the right to use and the most secure = 4.61 is the level of customer satisfaction. And to design and build a small survey, ground control systems on mobile devices. Able to work effectively in the = 4.61 level very satisfied. The efficiency control circuit to drive equal to 95.08% when calculating the Signal to Noise Ratio (SNR) is equal to 20.35 dB means quality applications very well.

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