SmallSEOTools

PLAGIARISM SCAN REPORT

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3.1.2 Module: Distance Calculation Input: Ultrasonic waves Output: Distance in cm. Description: 3. The module will take duration (time) between time from which ultrasonic transmitter transmits waves to ultrasonic receiver receives waves. 4. That duration (time) then divided by 58.2 to calculate the distance. 3.1.3 Module: Brake system Input: Distance in cm Output: slowdown vehicle Description: 1. Inputted distance compared to decided threshold 2. If distance is less as compared to standard distance then call braking system 3.1.4 Module: Collect data for guideline. Input: R Camera Module Output: Collect image data Description: 1. Pi-Camera are placed in front of vehicle or on top of vehicle. 2. Pi-Camera are continuously capturing images and forwarded to system. 3.1.5 Module: Generate alert signal. Input: Collected data as images from module 'Collect data for guideline' Output: Generate alert signal according to single Description: 1. Inputted image compared with trained models 2. If get matched with any model then generate alert according to it. 3. Else give 'Clear Road' alert. 3.2 System Requirements 3.2.1 Hardware Requirements Raspberry Pi Camera Module Ultrasonic sensor Raspberry Pi 3 Model B ROM 500 MB RAM 8 GB (Intel Core i7-10700T 10th GEN) 3.2.2 Operating System Requirements Windows 10 Raspbian 3.2.3 Application or Tools and Technologies Python 2.7 Raspberry Pi IDE- Thonny Libraries -OpenCV Fatkun extension - For collecting Dataset Cascade-Trainer GUI – For training the dataset 3.2.4 Storage requirement 2 GB memory for storage purpose (dataset + code) Dataset: 1.5 GB 4 GB RAM/2GB graphics for the dataset training purpose. 4. SYSTEM DESIGN 4.1 Architecture Diagram Fig 4.1 Architecture Diagram of System This Architecture Diagram elaborate overall structure of system. The main objectives of system are to avoid and decrease road accidents. A vehicle braking module and signal guideline module are helping to achieve objective. 4.1.1 Components in Architecture diagram In Architecture Diagram, A four modules of system are presented with required component. A vehicle, an ultra-sonic sensor, cameras etc. components are required. 1)Vehicle - A vehicle could be any four-wheeler or two-wheeler. 2)Ultra-sonic sensors - An ultrasonic sensor is an instrument that measures the distance to an object using ultrasonic sound waves. An ultrasonic sensor uses a transducer to send and receive ultrasonic pulses that relay back information about an object's proximity. Ultrasonic sensors work by sending out a sound wave at a frequency above the range of human hearing. The transducer of the sensor acts as a microphone to receive and send the ultrasonic sound. The sensor determines the distance to a target by measuring time lapses between the sending and receiving of the ultrasonic pulse. 3)Camera Sensor - A camera sensor uses an array of millions of tiny light cavities or "photosets" to record an image. A camera sensor is a device that allows the camera to convert photons i.e. light into electrical signals that can be interpreted by the device. 4.2 Use Case Diagram Fig 4.2 Use Case Diagram Above diagram shows main functionalities are shown. In diagram three users are shown i.e. Camera, Driver and Sensor. Out of those camera and sensor are related to each other. 4.3 Algorithmic description of each module: - 1) Module 1: - Object detection a) Start b) Transfer ultrasonic waves from transformer of sensor c) If path of ultrasonic wave is broken by object d) Then ultrasonic wave sends back to the receiver. e) End 2) Module 2: - Distance calculation a) Start b) Calculate duration of time from transformation state of wave to receiving state of wave. c) Duration (time) divided by 58.2 d) End 3) Module 3: - Vehicle brake system a) Start b) If distance less than threshold value c) Then slowdown vehicle d) Else clear road for vehicle e) End 4) Module 4: - Collect image data of signal a) Start b) Capture every image in front of camera c) Send image to alert generating module d) End 5) Module 5: - Generating alert generator a) Start b) Receive image c) Compare with trained model d) If matched with trained model e) Then generate alert according to it f) End 4.4 Data Flow Diagram 4.4.1 DFD level 0 Fig 4.4.1 Diagram of DFD Level 0 Above diagram shows first the sensor calculates the distance and pi camera captures the image and transfer that data which is input to system which then guides the driver/vehicle. 4.4.2 DFD level 1 Fig 4.4.2 Diagram of DFD level 1 As shown in above the specific functionality of each module is given which performs their respective tasks. 4.4.3 DFD level 2 Fig 4.4.3 Diagram of DFD level 2 As shown in diagram the specific functionality of each module is given which performs their respective

Diagram of DFD level 2 As shown in diagram the specific functionality of each module is given which performs their respective tasks. 4.5 Sequence diagram Fig 4.5 Sequence Diagram As shown in above diagram the sequence of several activities is shown, which are carried out in specific manner. 4.6 Class Diagram Fig 4.6.1 Class Diagram Above diagram elaborate the class structure of each module of system. The data members and functionality of each module is described. 5. IMPLEMENTATION 5.1 Environmental settings for running the module • Install Raspbian OS on Raspberry Pi. • Install Thonny IDE for Raspberry Pi. • Install required all libraries. • Install Cascade Trainer-GUI tool on training machine • Add extension to Chrome extension named as Fatkun Batch. 5.2 Implementation Details 5.2.1 Brake System: - • Mount Ultrasonic sensor on Vehicle-Model and connect to distance calculation module. o Logic: The ultrasonic sensor connected to vehicle will send and receive waves and forward it into the transferable form to the distance calculation module. • Distance calculation, object detection module connects to braking system o Logic – Depends on the speed of sound the obtained waves(pulse) are divided by certain value to calculate the exact distance. • 'Robo chassis' helps brake system to slowdown the vehicle. o Logic: The calculated distance will be forwarded to the braking system module where depending on distance braking system will react.

Sources	Similarity
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