USE OF KTP TO ACTIVATE START MOTORCYCLE ENGINE WITH MODULE RC-522

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Abstract: Motorcycles are the main and affordable choice for the majority of Indonesian people, two-wheeled vehicles are chosen as the transportation that is commonly used. Indonesia has many motorcycle users, in 2019 there were 112,771,136 units. In 2020 there were 115.023.039 units, and in 2021 there were 120.042.298 units. The many motorcycles, increasing the theft of motorcycles (curanmor), and accidents caused by underage use. The purpose of conducting research to minimize theft, and the use of motorbikes by minors, this research uses quantitative methods. The results of the study found that when the user places the KTP on RC522, the condition of relay 1 will become NC to turn on the motorcycle's ignition system, then relay 2 will turn on the motorcycle's starter for 5 seconds, then it will turn off automatically. for relays, arduino provides pure 5VDC voltage. The conclusion from this study , RFID cards and KTP is have different serials, and different numbers, RFID cards have a serial combination of 9 numbers and letters, while KTP has a serial combination of 27 numbers and letters.

Keywords: KTP; microcontroller arduino; sepeda motor; start enggine.

Abstrak : Sepeda motor menjadi pilihan utama dan terjangkau untuk mayoritas masyarakat Indonesia, kendaraan roda dua dipilih sebagai transportasi yang umum digunakan. Indonesia memiliki banyak pengguna sepeda motor, tahun 2019 sebanyak 112.771.136 unit. Tahun 2020 sebanyak 115.023.039 unit, dan tahun 2021 sebanyak 120.042.298 unit. Banyak nya sepeda motor, meningkatkan pencurian sepeda motor (curanmor), dan kecelakaan yang diakibatkan penggunaan dibawah umur. Tujuan dilakukannya penelitian untuk meminimalisir curanmor, dan pemakaian sepeda motor oleh anak dibawah umur, penelitian ini menggunakan metode kuantitatif. Hasil penelitian mendapati ketika user meletakan KTP pada RC522, maka kondisi relay 1 akan menjadi NC untuk menyalakan sistem pengapian sepeda motor, kemudian relay 2 akan menyalakan stater sepeda motor selama 5 detik, kemudian akan mati secara otomatis. untuk relay, arduino memberikan tegangan 5VDC murni. Kesimpulan dari penelitian ini, kartu RFID dan KTP memiliki serial yang berbeda, dan jumlah yang berbeda, kartu RFID memiliki serial kombinasi 9 angka dan huruf, sementara untuk KTP memiliki serial kombinasi 27 angka dan huruf.

Kata Kunci : KTP; microcontroller arduino; sepeda motor; start enggine.

INTRODUCTION

The development of technology in the field of transportation means that there are many means of transportation that can be operated by various groups, both minors who do not have a driver's license (SIM) to the elderly. One of the commonly used transportation is a motorcycle.

Motorcycles are currently one of the modes of transportation that are favored by Indonesian people, this is because the price of motorbikes is quite cheap, and how to operate motorbikes can be categorized as easy. The relatively affordable price of motorbikes, coupled with the convenience of a motorcycle ownership credit system, makes it easier for people with low incomes to own motorbikes. In addition, motorbikes are still the main choice and the most affordable for the majority of Indonesian people, two-wheeled vehicles are chosen as the most commonly used transportation. These vehicles are practical and efficient, making motorcycles a favorite choice [1], [2].

Indonesia itself has many motorbike users, seen from 2019 there were $112,771,136$ units. In 2020 there were $115.023.039$ units, and in 2021 there were $120.042.298$ units. From 2019 to 2021, there has been an increase of 7,271,162 units. The large number of motorbikes also makes motorbike theft happen a lot, although based on data every year there is a decrease in motorbike theft. In 2019 there were 23476 cases, in 2020 there were 18557 cases and in 2021 there were 18005 cases. So that from 2019 to 2021 there has been a decrease in cases of 5,471 cases. Meanwhile for motorcycle accidents, both accidents caused by traffic accidents, or accidents caused by motorbike users do not have a driver's license (SIM) or are minors. In 2019 there were 116411 accidents, in 2020 there were 100028 accidents and in 2021 there were 103645 accidents. From 2019 to 2021 the number of accidents decreased by 12766 accidents [3].

There are several studies that discuss systems for anticipating motorcycle theft, with the title of microcontroller-based motorcycle safety, in their research explaining that when the secret switch is activated and the ignition is turned on, the horn will immediately sound and the motorcycle engine cannot be turned on [4].

Research title design of security systems on motorcycle by utilizing encoder sensors and ping sensors, in his research explained that the encoder sensor (distance) can work to sound an alarm when the number of beats is 35 points (disc holes) or 4.92 meters away and the ping sensor (height) can work to sound an alarm at a data counter of 1040 or altitude. 0.4 meters from the surface/road [5].

Research tittle Mobile Device-Based Motorcycle Security System with Notification and Machine Control, in their research, if a motorcycle theft occurs, the owner can turn on the siren alarm through a mobile device and control the motorcycle engine as a preventive measure [6].

Research tittle multiple security systems on the bike motors for theft prevention with smarty(smart security), in their research when the password sent in the form of an SMS is incorrect, the device does not respond. This tool uses a keypad that is used to enter data via a password to open the security system and the results are appropriate [7].

Research tittle Arduino-Based Motorcycle Engine Ignition Design via Bluetooth Android Andika, discussing about From the test results it was found that the maximum distance that can be achieved between Android and Bluetooth to operate a motorcycle engine is about 10 meters. This system also makes our motorcycle engine ignition a smart ignition [8].

Based on previous research, the entire system designed by them uses embedded system technology. Embedded systems are controllers of controllers and can be designed for specific purposes, such as creating artificial intelligence concepts from inputs and outputs and reading automated systems [9], [10].

The purpose of this research is to anticipate the use of motorbikes by minors who do not have ID cards, as well as to minimize motorcycle theft (Curanmor). The system or tool to be designed, when the RC 522 module is energized and the KTP module is placed on RC 522, the RC 522 module will read NIK data or KTP hexadecimal data, and then the data will be compared to the data controller. The system or tool to be designed, If the data being compared is appropriate, then relay 1 will activate the ignition or the motorcycle engine, and then relay 2 will be active or in the normal close position for a few seconds to start or start the engine, then return to the normal open position, so the motorcycle will start.when the RC 522 module is energized and the KTP module is placed on RC 522, the RC 522 module will read NIK data or KTP hexadecimal data, and then the data will be compared to the data controller.
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METHOD

This study uses a quantitative method, where the data that works on the controller or embedded system works at a working voltage of 5VDC which is supplied from a motorcycle battery of 12VDC and lowered by a stepdown module, so that it becomes 5VDC, This research was conducted at the STMIK Royal range electro lab, and later the robot design testing was carried out on automatic type motorcycles [11].

As for the RC 522 module and relay and other supporting components in the form of a buzzer, it is supplied by the controller with an output voltage of 5VDC, but the RC 522 module only takes 3.3VDC voltage.
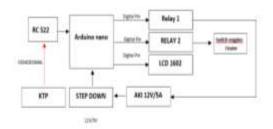

Image 1. Block diagram of the system work concept

Based on Image 1, it explains, if the user places a KTP or identifier in the RC 522 module, the controller will automatically activate relay 1 to connect to the motorcycle ignition system, namely to the 12vdc/5A battery. Then relay 2 will be active for 5 seconds, to start the engine switch. Then relay 2 will turn off again, but the motorcycle will not turn off, while the LCD will display all information, whether the engine switch is active or not.

To operate the 522 rc module, you need to write a sketch command that must be filled in on the controller [12]. Any sketch used:

```
#include <SPI.h>

// set pin 10 as the slave select for the digital pot:
const int slaveSelectPin = 10;

void setup() {
 // set the slaveSelectPin as an output:
 pinMode (slaveSelectPin, OUTPUT);
 digitalWrite (slaveSelectPin, HIGH);
 // initialize SPI:
 SPI.begin();
}
void loop() {
 for (int channel = 0; channel < 6; channel++) {
  for (int level = 0; level < 255; level++) {
   digitalPotWrite(channel, level);
   delay(10);
  }
  // wait a second at the top:
  delay(100);
  // change the resistance on this channel from max to min:
  for (int level = 0; level < 255; level++) {
   digitalPotWrite(channel, 255 - level);
   delay(10);
  }}}

void digitalPotWrite(int address, int value) {
 SPI.beginTransaction(SPISettings(4000000, MSBFIRST,
SPI_MODE0));
  digitalWrite(slaveSelectPin,LOW);
 SPI.transfer(address);
 SPI.transfer(value);
 digitalWrite(slaveSelectPin,HIGH);
  SPI.endTransaction();
}}
```

In using a tool design or using a motorbike, people who can use are people who have an ID card, where the ID card chip is written in the sketch command above, so that if there is a user who does not have a card, or has a card, but the card code cannot be programmed , then the motorcycle cannot be used by that user.

RESULT AND DISCUSSION

RFID (Radio Frequency Identification) will be connected to the arduino controller pin. Serial analog data PIN (SDA) will be connected to pin 10. While SCK PIN is connected to pin 13, Mosi and Iso pins are connected to pins (Rx. Tx) or 11, 12. Reset pin is connected to pin 9 of the controller, and to provide voltage on RFID, the GND

pin and vcc pin are connected to gnd and 3.3VDC.An explanation of connecting the Arduino Nano controller pins to the RC 522 is shown in Image 2.

Image 2. Display of RC 522 with arduino.

Image 2 explains that the RC 522 module will read KTP data or chips, the data is read in the form of hexadecimal numbers, where each KTP or KTP chip has a different hexadecimal number. after that, the data will be compared by the controller, so that if the data being compared is appropriate, then relay 1 will be active, or flow the motorcycle, after a few seconds or the equivalent of 2 seconds, then the motorcycle will be active through relay 2.

Image 3. Shows the KTP test when turning on the start engine motorcycle.

Overall testing of the design of the tool aims to find out whether the conditions in the field are in accordance with the design of the tool to be made and adjust it to the existing conditions. The overall test results are shown in the table 1.

Table 1. Overall tool test results

No	Kondisi	Relay 1	Relay 2
1	KTP User	NC	NC
2	KTP non USer	NO	NO
3	RFID User	NC	NC
4	RFID non user	NO	NO
5	Modul user	NC	NC
6	Modul non user	NO	NO

Based on the table above, it describes the conditions in the field, when the user's ID card, RFID user, and user module are embedded in the controller program, they will be active or the relay will move to a normal close (NC) condition, whereas vice versa if the KTP, RFID and module are not the owner of the user, or non-user then all relay 1 and relay 2 will not be active or equal in a state of total shutdown or normally open conditions (open).

Strengths and Weaknesses of Tool Design

The advantages and disadvantages of designing tools in the field or at the time of design, among others:

Excess

Motorcycles use an RFID or KTP card reader system so that motorbikes can only be accessed by KTP or RFID whose code is embedded in the controller.

All activities carried out by the church congregation when picking up or placing helmets will be displayed on LCD 1602, including the RFID card user number and KTP.

Lack

If the RFID card and KTP are lost, and are found by someone else, then that person will be able to start the motorcycle.

When the KTP and RFID are lost, to repair the system, the controller must be re-coded by the expert.

CONCLUSION

The RC522 RFID module is able to identify the motorbike owner, by reading the condition of the card data held by the motorbike owner, and the Arduino controller module. can't read the card type, but with the help of the RC522, the tag card can be read by placing the card above the RC module.

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