



MIDLANDS STATE UNIVERSITY

IP DISCLOSURE OF INTELLECTUAL PROPERTY Received on:		To: Research and Innovation Midlands State University P. Bag 9055 Gweru	Name of inventor(s):				
			LUKE PAIDAMOYO MAGAYO GAMUCHIRAI MUNYARADZI KASIMBIRA RALPH TUNGAMIRAI PAUNGANWA				
For Official Use	Representative's File Reference :	Job Title (eg. acad., student):	Contact details (disclosing inventor/s):	Email address	Faculty	Department	Date of disclosure:
		STUDENT	+263 782 469 530 +263 772 847 766	Lukie.magaya@gmail.com rtpaunganwa@gmail.com	SCIENCE & TECHNOLOGY	COMPUTER SCIENCE	21/07/2022

21 AUG 2022
 REGISTRAR OF PATENTS
 TRADE MARKS, INVENTIONS
 AND DESIGNS

1. Title of Invention: HATIRARE SYSTEM (RFID CHECKPOINT SYSTEM)	2. What is the field of technology of the invention? SECURITY	3. What problems does the invention solve?	4. Provide full description of the invention
Increasing guard awareness Track who is making checks and when they are made. Create patrol reports in seconds Make security guard patrols simple, easy and accurate			

MSU LEGAL OFFICER
 5/08/22

The Hataitare System uses RFID tags to enable guards to log their movements around a site providing security for the guards & peace of mind for the client for example security guard company. Reports generated can be tailored to suit the requirements of the site owner & the route tailored to focus potential weak spots within the guarded area.

5. Stage of development of the Invention

The Invention has a fully developed and functional proto-type now. Market stage is what we are undergoing. Improving every failure in the existing system to produce a perfect system in the market.

6. Type of IP Protection Envisaged:

Copyrights

7. Has the work been disclosed? NO

b) Is any public disclosure planned?

YES

c) Nature of Public Disclosures:

When performing our market test, putting the product into the market for the first time in order to see how the system responds.

8. Use of Existing Knowledge

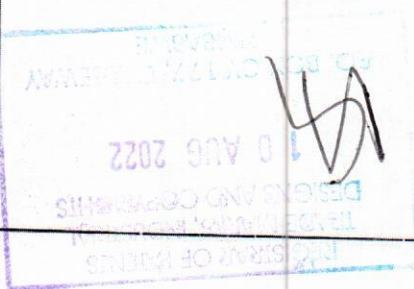
Is the work:

i) based on, or derived from, existing knowledge or use

Yes			
-----	--	--	--

If yes, please describe in more detail:

In 1969 CHECKPOINT SYSTEMS were used under a subsidiary of logistics industries corporation. We attained insights from that and then reverse engineered to get something that



MS-LEGAL OFFICE
05/08/22

can suit our current security systems in Zimbabwe

ii) co-owned or individual

	No	
--	----	--

If yes, has a contract been entered into to record this co-ownership?

N/A/N/A

9. Materials

a) Materials received from third parties under materials transfer agreement:

b) Source(s):

c) Conditions of transfer including relevant agreements:

d) Do the conditions of transfer permit commercial exploitation and use of the material? If so, do any royalties need to be paid?

10. Source of Research Funding

a) Funding sources:

Funder	Amount (\$)

11. Potential Commercial Partners/Licensees

a) Companies that may be interested in the invention:
Universities (Midlands State University, ZOU, Bear Valley)
Private Schools (Tynwald High School, Gateway, Falcon)

MSA LEGAL OFFICE
05/08/22

b) Existing links with potential commercial partners:

Midlands State University

c) Technical, marketing and investment contacts with knowledge relevant to the potential application that could assist with the commercial evaluation of the invention:

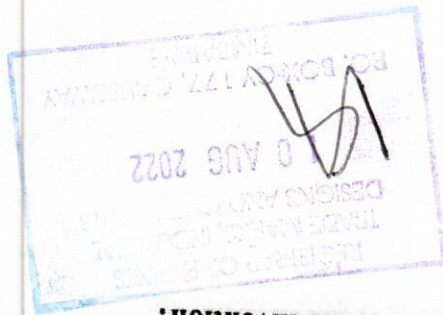
Midlands state university Innovation Hub

d) Information on the commercial viability of the invention, e.g. selling price, potential markets, or a business plan:

For every 10 checkpoints you pay \$500USD includes installation.

12. What are the practical applications of the invention?

- Schools
- Embassy
- Parking Lots
- Hotels
- Private Property



13. Are they any third parties who have a claim of ownership to the Invention? If so, stipulate the nature of commitments and provide associated agreements detailing such ownership claims if any

None

14. Are they any agreements that affect the Invention (eg material transfer agreements)?

None

15. Did you use any University resources in the development of the Invention? If yes, stipulate nature of these contributions.

WIFI for research as we went through the development process

MSU LEGAL OFFICE
05/08/22



Name of Inventor: LUKE P. MAGAYO Signature: *[Signature]* Date 21/07/2022
Name of Inventor: GAMUCHIRAI M. KASIMBIRA Signature: *[Signature]* Date 21/07/2022
Name of Inventor: RALPH T. PAUNGANWA Signature: *[Signature]* Date 21/07/2022
Departmental Chairperson Mr M. Giyane Signature: *[Signature]* Date 4/8/22
Faculty Incubation Hub Rep *M.R. Mudeziwapa* Signature: *[Signature]* Date 05/08/22
Dean of Faculty *A. A. Ndlovu* Signature: *[Signature]* Date 05/08/22

set patrol plan with the actual patrol records and then can obtain statistical reports such as patrol missed and missed points. These reports can truly reflect the actual completion of the patrol results.

Below is the image of the system basically we have the screen to display if the checkpoint has checked successfully, the Node for wifi capabilities to send data through wifi then the RFID to scan the Guard ID.

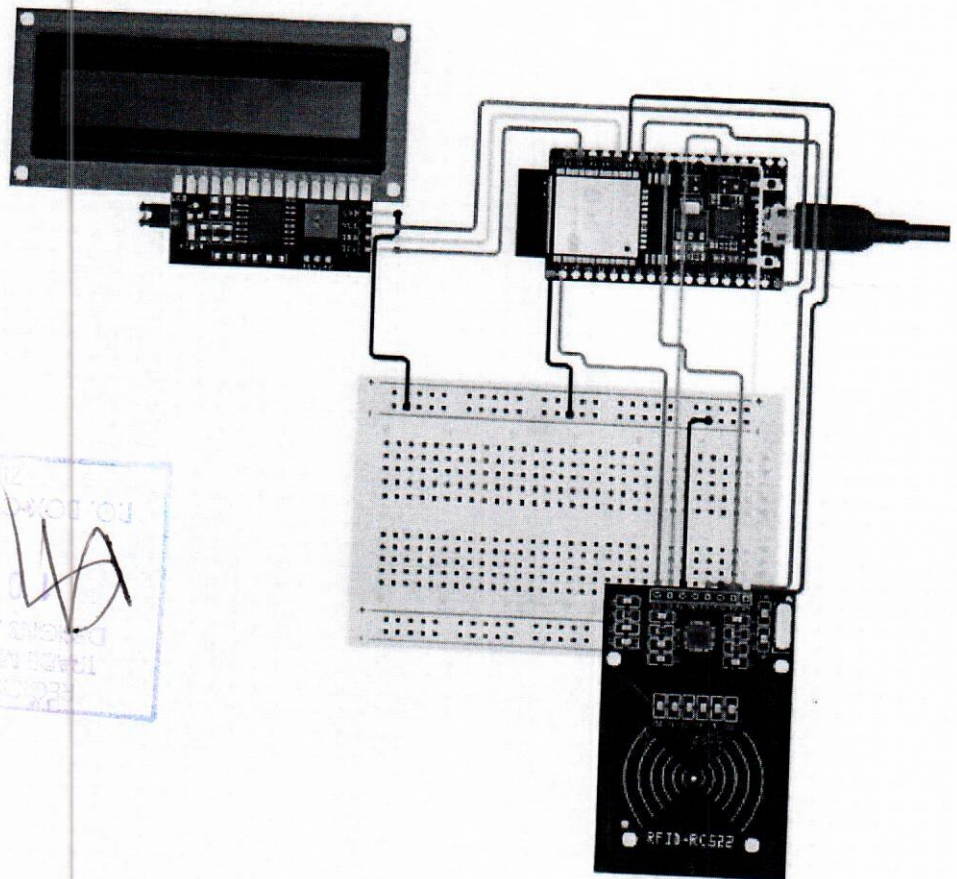
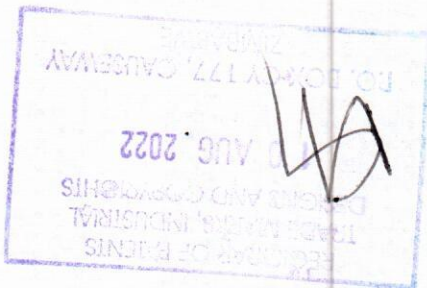


Figure 1: System Design in Circuit IO



MSU LEGAL OFFICE
05/08/2022

Code Snippets

```
// Include Libraries
#include "Arduino.h"
#include "LiquidCrystal_PCF8574.h"
#include "RFID.h"
```

```
// Pin Definitions
#define RFID_PIN_RST 0
#define RFID_PIN_SDA 5
```

```
// Global variables and defines

// There are several different versions of the LCD I2C adapter, each might have a different address.
// Try the given addresses by Un/commenting the following rows until LCD works follow the serial
// monitor prints.
// To find your LCD address go to: http://playground.arduino.cc/Main/I2CScanner and run example.

#define LCD_ADDRESS 0x3F
// #define LCD_ADDRESS 0x27
// Define LCD characteristics
#define LCD_ROWS 2
#define LCD_COLUMNS 16
#define SCROLL_DELAY 150
#define BACKLIGHT 255
// object initialization
LiquidCrystal_PCF8574 lcd(I2C);
RFID rfid(RFID_PIN_SDA, RFID_PIN_RST);
```



MSU LEAD OFFICER
05/08/22


```
// define vars for testing menu
const int timeout = 10000; //define timeout of 10 sec
char menuOption = 0;
long time0;
```

```
// Setup the essentials for your circuit to work. It runs first every time your circuit is powered with
electricity.
void setup()
```

```
{
    // Setup Serial which is useful for debugging
    // Use the Serial Monitor to view printed messages
    Serial.begin(9600);
    while (!Serial) ; // wait for serial port to connect. Needed for native USB
    Serial.println("start");
}
```

```
// initialize the lcd
lcd12C.begin(LCD_COLUMNS, LCD_ROWS, LCD_ADDRESS, BACKLIGHT);
//initialize RFID module
rfid.init();
menuOption = menu();
}
```

```
// Main logic of your circuit. It defines the interaction between the components you selected. After
setup, it runs over and over again, in an eternal loop.
void loop()
```

```
{
    if(menuOption == '1') {
        // LCD 16x2 I2C - Test Code
        // The LCD Screen will display the text of your choice.
    }
}
```

MSA LEAK OFFICER
05/05/22


```

lcd12C.clear(); // Clear LCD screen.
lcd12C.print(" Circuito.io "); // Print print String to LCD on first line
lcd12C.selectLine(2); // Set cursor at the beginning of line 2
lcd12C.print(" Rocks! "); // Print print String to LCD on second line
delay(1000);

```

```

}
else if(menuOption == '2') {
    // RFID Card Reader - RC522 - Test Code
    // Read RFID tag if present
    String rfidtag = rfid.readTag();
    // print the tag to serial monitor if one was discovered
    rfid.printTag(rfidtag);
}

```

```

}
if (millis() - time0 > timeout)
{
    menuOption = menu();
}

```

```

// Menu function for selecting the components to be tested
// Follow serial monitor for instructions
char menu()
{

```

```

Serial.println(F("\nWhich component would you like to test?"));

```



MSA LEAKT OFFICE
05/08/22

```

Serial.println(F("(1) LCD 16x2 I2C"));
Serial.println(F("(2) RFID Card Reader - RC522"));
Serial.println(F("(menu) send anything else or press on board reset button\n"));
while (!Serial.available());

```

```

// Read data from serial monitor if received
while (Serial.available())

```

```

{
char c = Serial.read();
if (!isAlphaNumeric(c))

```

```

{
if(c == '1')

```

```

Serial.println(F("Now Testing LCD 16x2 I2C"));

```

```

else if(c == '2')

```

```

Serial.println(F("Now Testing RFID Card Reader - RC522"));

```

```

else

```

```

{
Serial.println(F("Illegal input"));

```

```

return 0;

```

```

}
time0 = millis();

```

```

return c;

```

```

}
}
}

```

```

/*****

```

MSU LEGAL OFFICE
05/08/22

