System Diagram

System Diagram of Remote Controller

Digital Signal

Display the auto and manual mode of the camera stand

Auto/Manual Button

DistanceJJ

Digital Signal

Changing the current state of the camera stand as auto and manual.

Siren Button

DistanceJJ

Digital Signal

On and off the siren in the camera stand.

16 x 2 LCD Display

User Instructions

nRF24L01 Transceiver Module

Distance

Sending the Radio Frequency signals to the camera stand through the nRF24L01 module of the remote controller.

Serial Data

Joystick-1

DistanceJJ

Analog Signal

Changing the vertical angle of the camera within 90 degrees.

Joystick-2

DistanceJJ

Analog Signal

Moving the camera stand forward and backward as well as left and right.

Output

Input

Processes

**Process 3:** Send serial data to the transceiver module using SPI.

**Process 1:** Get analog signal from two joysticks and convert it to Digital value using ADC.

**Process 2:** Get digital signals from two buttons and display it using I2C.

Maintain the connection with the Camera stand by using Radio Frequency

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4 x Gear Motors

Camera Stand Motions

Digital Signal

To move the camera, stand by rotating the wheels.

Serial Data

NEO-6M GPS Module

To take the real time GPS coordinates which we need to calculate the angle to the user inputted GPS coordinate (user inputted GPS coordinates through the keypad.)

Digital Signal

Keypad

To take the GPS coordinates of the place which we need to move our camara stand.

Serial Data

HMC5883L Magnetometer

To take the current facing direction of the camera stand according to the true North.

Digital Pulse

4 x Ultrasonic Sensor

To detect and avoid obstacles while camera stand is moving.

Siren

Digital Signal

To chase away harmful animals when they try to attack the camera stand.

16 x 2 LCD Display

Serial Data

To display GPS coordinates, to display the status (auto or manual) and to display user messages.

Servo Motor

Camera Alignment

Digital Signal

To lift the camera according to the given angle by the remote controller.

Receiving the Radio Frequency signals which are coming from the nRF module of the remote controller.

Serial Data

nRF24L01 Transceiver Module

Distance

**Process 3:** If the mode is auto, the GPS coordinates will take from the user.

**Process 2:** If the mode is manual, get serial data from transceiver (related to joysticks) using SPI and process them.

**Process 1:** Get received serial data (related to auto/manual button) from transceiver module and according to that, initialize the manual and auto mode.

**Process 4:** By taking inputs from the GPS module, magnetometer module, and ultrasonic sensor detect the correct path to move the camera stand.

**Process 6:** While happening this process when the RF module sends a signal siren will be sounded.

**Process 5:** While finding the correct path according to the process-4 moving the camera stand by using the gear motors (wheels).

**Process 7:** While happening all these processes the user instructions are given through the LCD Display to the users.

System Diagram of Camera Stand