GSM Unmanned Arial Photography Using Remote Flying Robot For Defense

Branch:	Avionics	**Duration:**	
Processor:	AT89C51, X86	**Hardware:**	
Technology:	C51,RF	**Software:**	KeilC51: C51, Windows - C

Aim: To capture any image of the human and send it to the PC using wireless audio and video Communication for defense.

Description:

This system involve to Monitoring and controlling the system using four different modules,

1) *Flying Robot Control Unit*
2) *Wireless control Unit*
3) *Sensing and Control Unit*
4) *PC and Control unit*

1. Introduction About Project

Development of a suitable lightweight system in which a sensor is airborne for carrying out surveillance. The sensor should remain airborne for a minimum of 2 minutes at a minimum height of 30 meter and above to do imaging of a proportionate area below. Recognizable real time video information should be transmitted to the ground receiver point suitably located in the observation area. Sensor should be able to detect man-sized objects in above-mentioned conditions. Proposed solution should take up design of configuration and identification of suitable options for sensor, data link, ground observation & control points and other support system(s). System configuration details comprising of sensor, data link, observation, data processing mechanism and support system should form part of the design.

Motion Detection Algorithms

Introduction

There are many approaches for motion detection in a continuous video stream. All of them are based on comparing of the current video frame with one from the previous frames or with something that we'll call background

This application supports the following types of video sources:

- AVI files (using Video for Windows, interop library is included);
- updating JPEG from internet cameras;
- MJPEG (motion JPEG) streams from different internet cameras; local capture device (USB cameras or other capture devices, DirectShow interop library is included).

- It is much more simpler to understand;
- The implementation of the filter is more efficient, so the filter produce better performance.

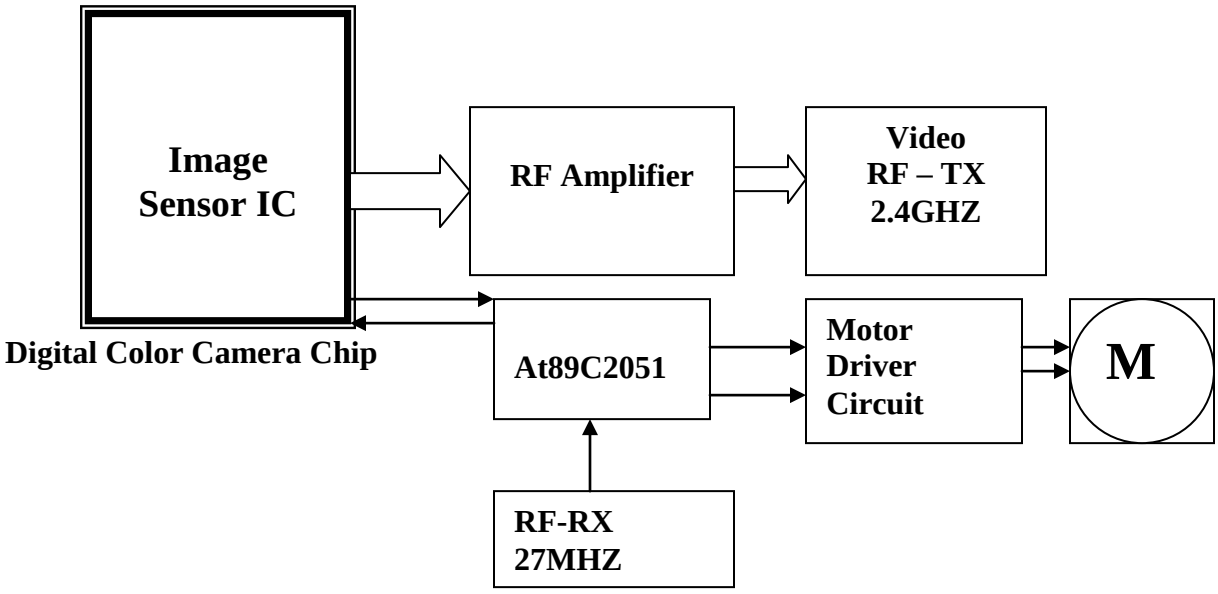
Motion Alarm

It is to add motion alarm feature to all these motion detection algorithms. Each algorithm calculates a binary image containing difference between current frame and the background one. So, the only we need is to just calculate the amount of white pixels on this difference image.

For some algorithms it could be done even simpler. For example, in blob counting approach we can accumulate not the white pixels count, but the area of each detected object. Then, if the computed amount of changes is greater than a predefined value, we can fire an alarm event.

1.CMOS Color Camera IC and RF Transmitter Interface Circuit

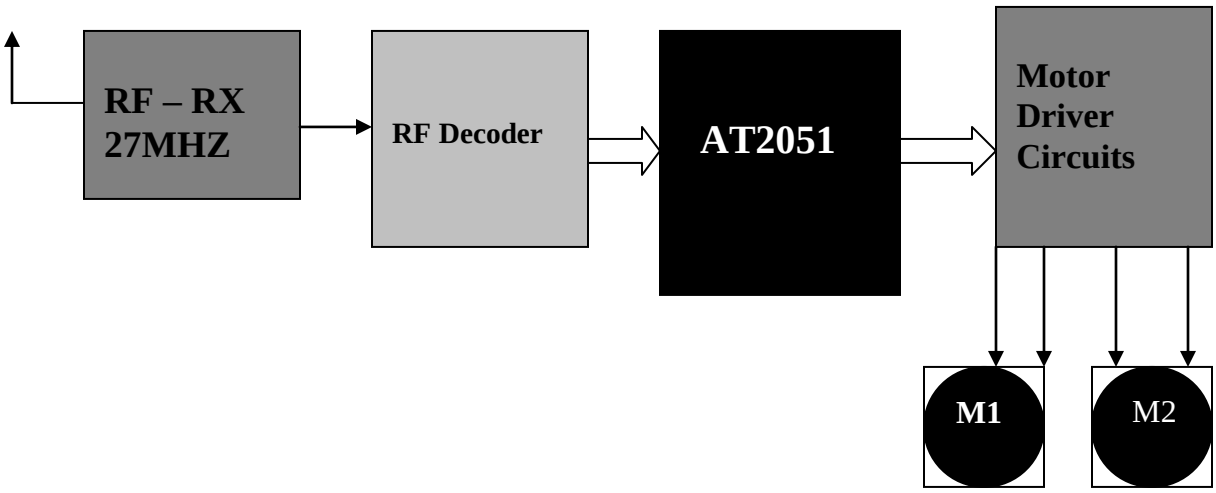
A digital color camera has been monolithically realized in a standard 0.8-_m CMOS technology. The chip integrates a 354 _ 292 photo gate sensor array with a unity-gain column circuit, a hierarchical column multiplexer, a switched-capacitor programmable-gain amplifier, and an 8-b flash analog/digital converter together with digital circuits performing color interpolation, color correction, computation of image statistics, and control functions. The 105-mm2 chip produces 24-b RGB video at 30 frames/s. The sensor array achieves a conversion gain of 40 _V/electron and a monochrome sensitivity of 7 V/lux_s. For a 33-ms exposure time, the camera chip achieves a dynamic range of 65 dB and peak-to-peak fixed pattern noise that is 0.3% of saturation. Digital switching noise coupling into the analog circuits is shown to be data independent and therefore has no effect on image quality. Total power dissipation is less than 200 mW from a 3.3-V supply.



Explanation:

This is the basic block diagram of camera unit, for transmitter section. In this BD the camera IC will provide high level functionality for all applications. This camera IC is controlled by microcontroller which is connected to it. The camera automatically focus the object upto 50 m and is controlled by microcontroller.

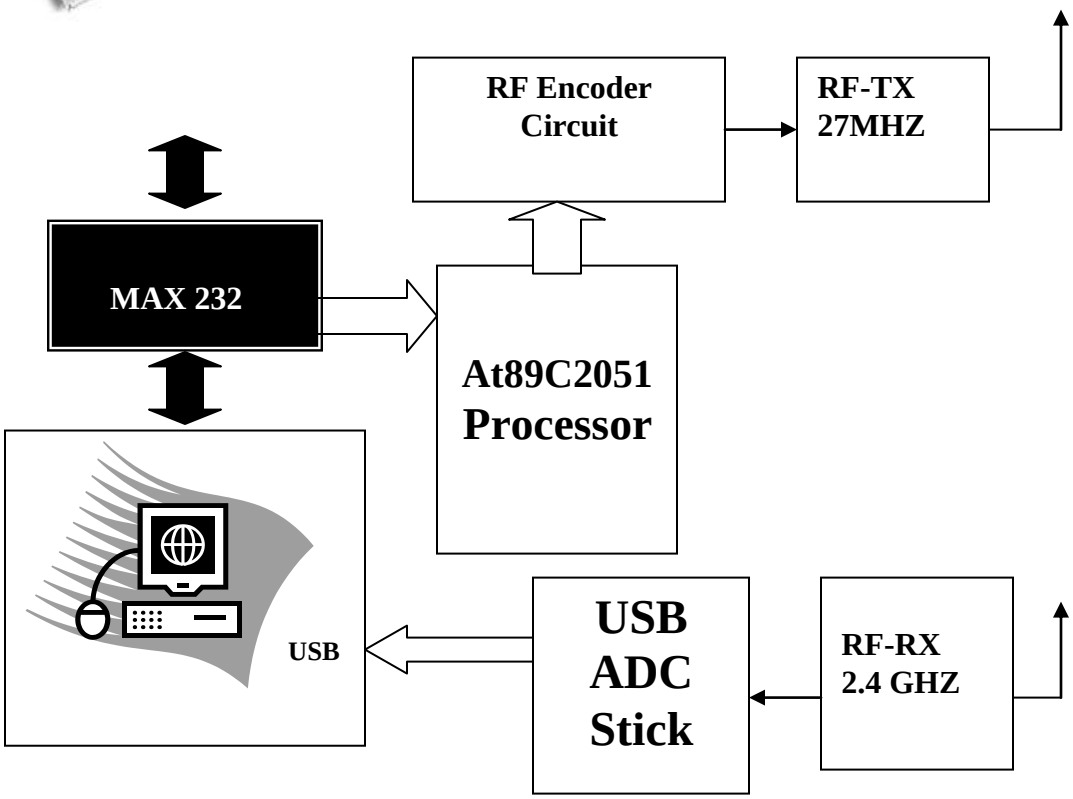
2. Remote Helicopter Control Unit:



Explanation:

The data which is received from transmitter is given to the microcontroller. The microcontroller gives data to motor driver circuits to control. The two motors are controlled by micro controller.

1. PC Control Unit:



The PC will receive the data from video receiver circuit by 2.4GHZ frequency and the communication will happening through USB port in 2.0 version. After receive the video frames to Display through Real Player and read each every 35 frames per sec. each frame to compare Algorithm by Ericson and Gray scale filter and with edge detect algorithm. After comparison the system will fan-out if any human based object is detected or not if detected it will give the alarm.

6. Advantages and disadvantages of our system

- This system is lightweight system in which a sensor is airborne for carrying out surveillance for finding military border.
- Less weight
- Less Cost
- Autonomous system
- No sound and no external noise problem

  - Light weight so wind will effect
  - Minimum 1hour will fly on air
  - No safety equipment added
  - It wont detect perfect person details