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OBJECT TRACKING ROBOT WITH TRIGGER MECHANISM USING MATLAB

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Abstract **--** The detection and tracking of mobile objects (DATMO) is progressively gaining importance for security and surveillance applications. This project proposes a set of new algorithms and procedures for detecting and tracking mobile objects by robots that work collaboratively as part of a multi robot system. These surveillance algorithms are conceived of to work with data provided by long distance range sensors and are intended for highly reliable object detection in wide outdoor environments. Contrary to most common approaches, in which detection and tracking are done by an integrated procedure, the approach proposed here relies on a modular structure, in which detection and tracking are carried out independently, and the latter might accept input data from different detection algorithms. The solution to the overall problem is based on the use of an Image processing for detection of object and target tracking done with help of gun movement.

Keywords-*Object tracking, Blob detection, USB to TTL, MATLAB, Trigger*

I.INTRODUCTION

The objective of this project is to identify and track a moving object within a video sequence. It is a method of following an object through video frames to determine its relative movement. This project is based on optical flow among video sequence in contrast to blob size detection. The blob size detection algorithm is straight forward and easier to implement. The project consist of Software simulation on Matlab R2012B. Object detection is a fundamental basis of artificial intelligence and robotic vision system. Object Detection and tracking is used in various field like Science Engineering and Medical Applications. It is necessary for guidance of autonomous vehicles, detection and smart tracking of moving objects etc. This paper deals with object detection, its tracking and trigger mechanism based on centroid of object. Image acquisition is done with the help of a camera and MATLAB is used to process it.

II.MOTIVATION

After getting acknowledged of about Object Tracking robots used for surveillance, we were acquainted with this idea to use it as a final year project. We went through different sites and journals and researched about the object tracking robots previously made. We optimized the robot by using MatLab as the original work piece was highly priced. As we were interested in the field of robotics, we thought of taking up and work on this project as it would expand our knowledge and ponder us on many questions.

III.WORKING

1. The camera is used to capture the video of the object which is to be tracked. This is done using image processing in pc.
2. The interface between PC and microcontroller is USB to TTL.
3. Microcontroller receives movement of object from pc through USB to TTL.
4. We need three motors to drive dc motors.
5. One of the motor driver is connected to it is used to drive the robot forward backward left and right.
6. The other motor driver and motor is used for camera movement.
7. The third motor driver and motor is used for triggering mechanism.

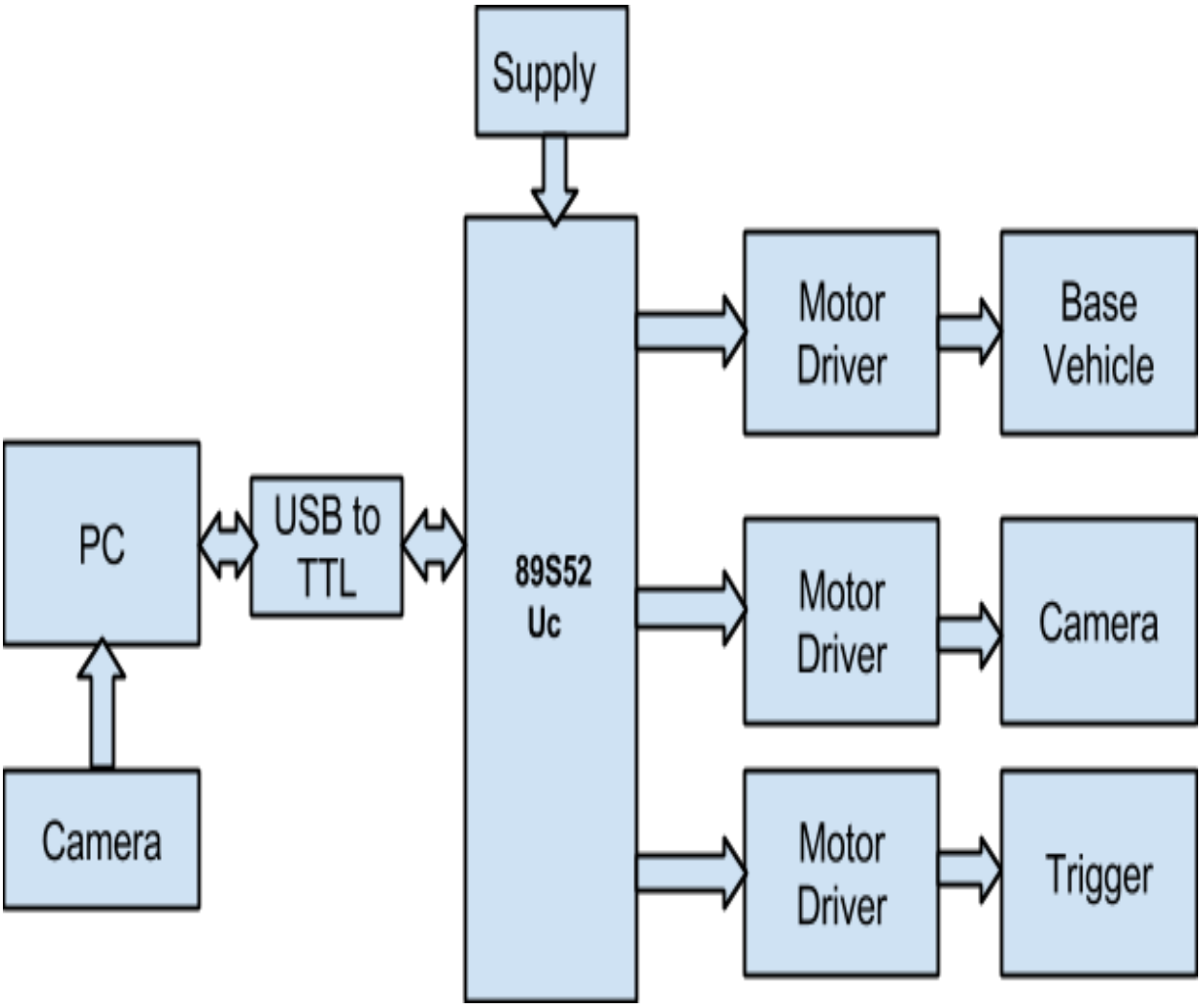

Fig.1

IV.FLOWCHART

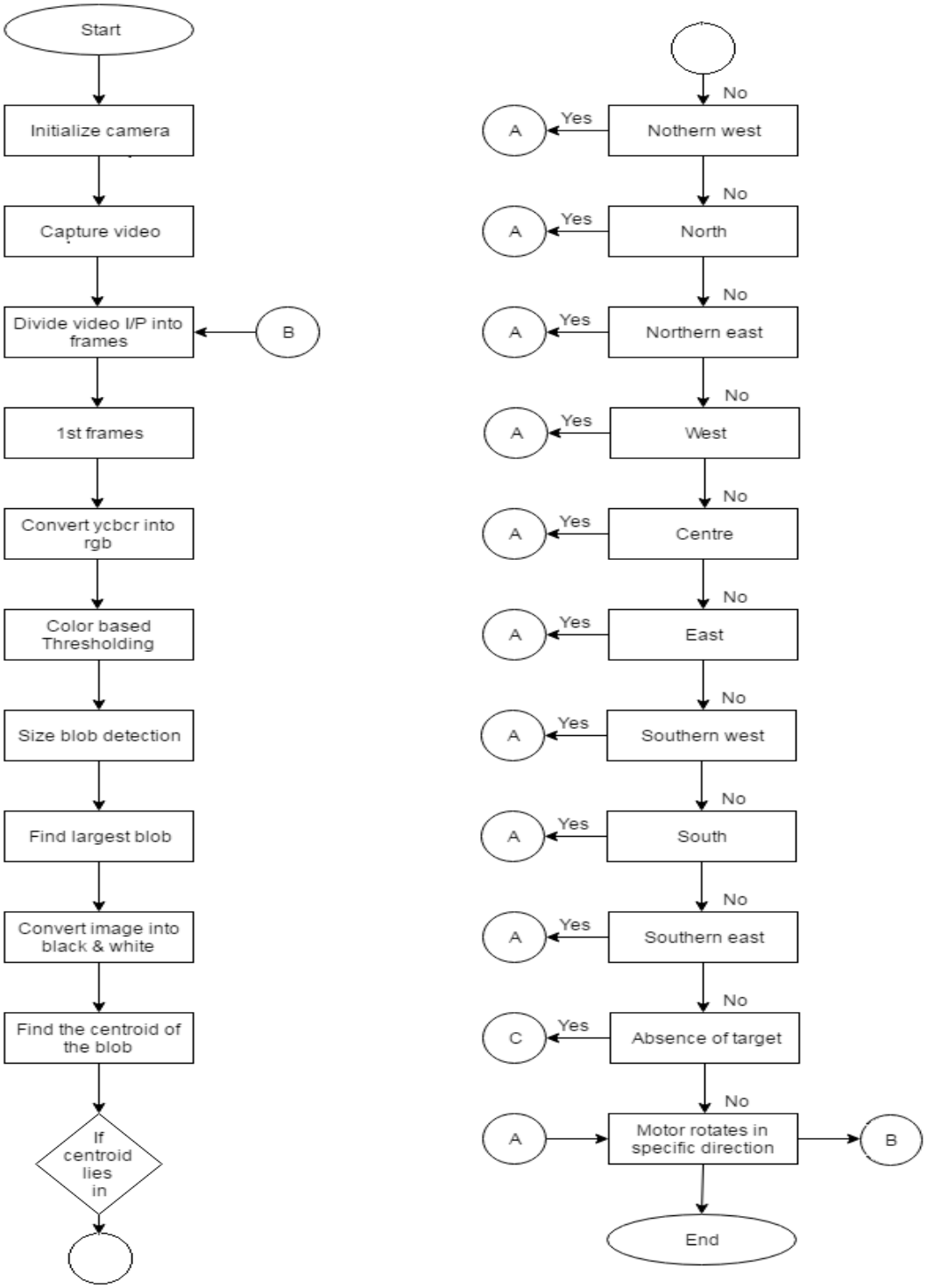

Fig.2

V.HARDWARE AND SOFTWARE REQUIREMENTS

A. Hardware

1. Microcontroller 89s52
2. Motor Driver IC 723d
3. Motor
4. Camera

B. Software

1. Keil 8051 Microcontroller Development Tools
2. MatLab R2012b

VI.CONCLUSION

Thus we have designed a system in which a particular object can be tracked using camera and MATLAB for image processing in Microcontroller. The robot moves according to the tracked object movement. Finally the object is triggered after the object has been found.

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