GESTURE RECOGNIZING ROBOT

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PROBLEM STATEMENT

- Study and implementation of "GESTURE RECOGNIZATION" on Spark V Robot using MS Kinect .
- Gesture recognition enables humans to interface with the machine (HMI) and interact naturally without any mechanical devices.
- The main purpose is to identify a particular human gesture and control the robot pertaining to that particular gesture.

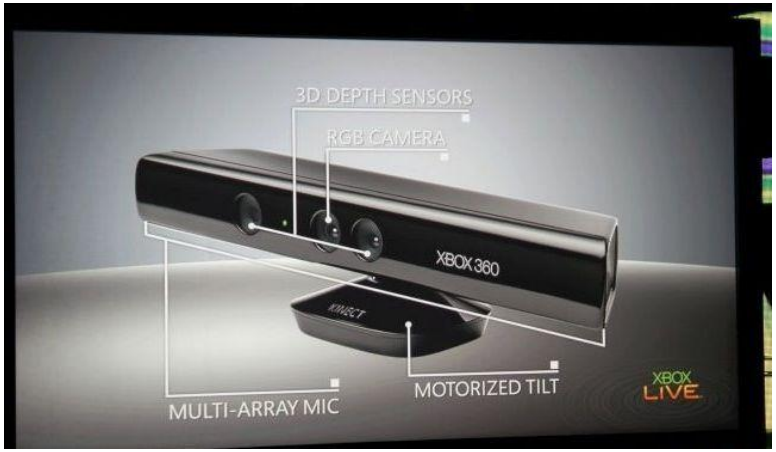
REQUIREMENTS

- **Hardware requirements**

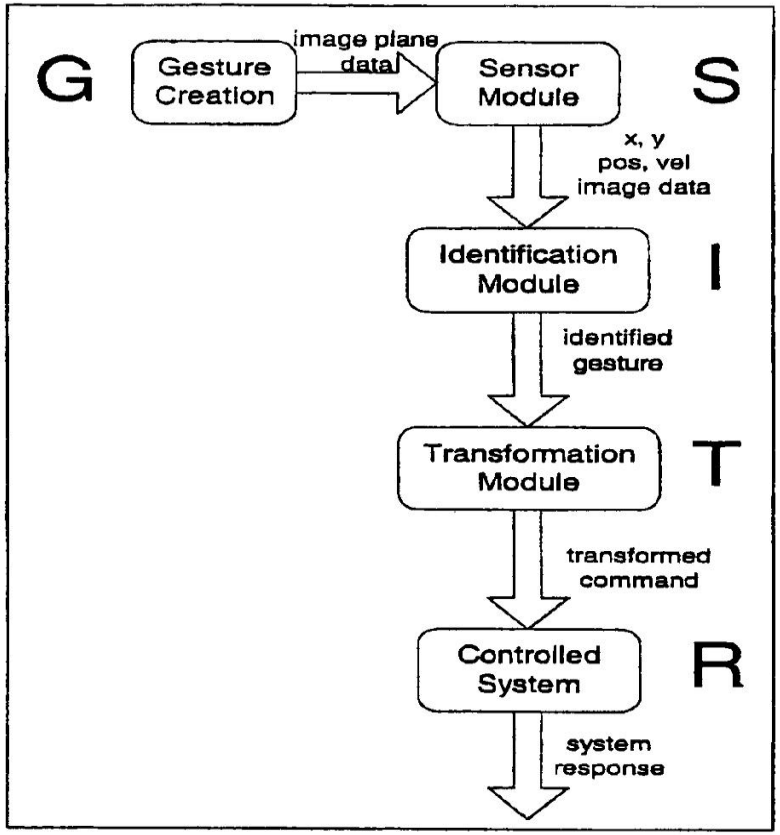
1. Spark V robot.
2. MS Kinect Kit.

- **Software requirements**

1. Visual Studio.
2. Windows 7 .



BLOCK DIAGRAM



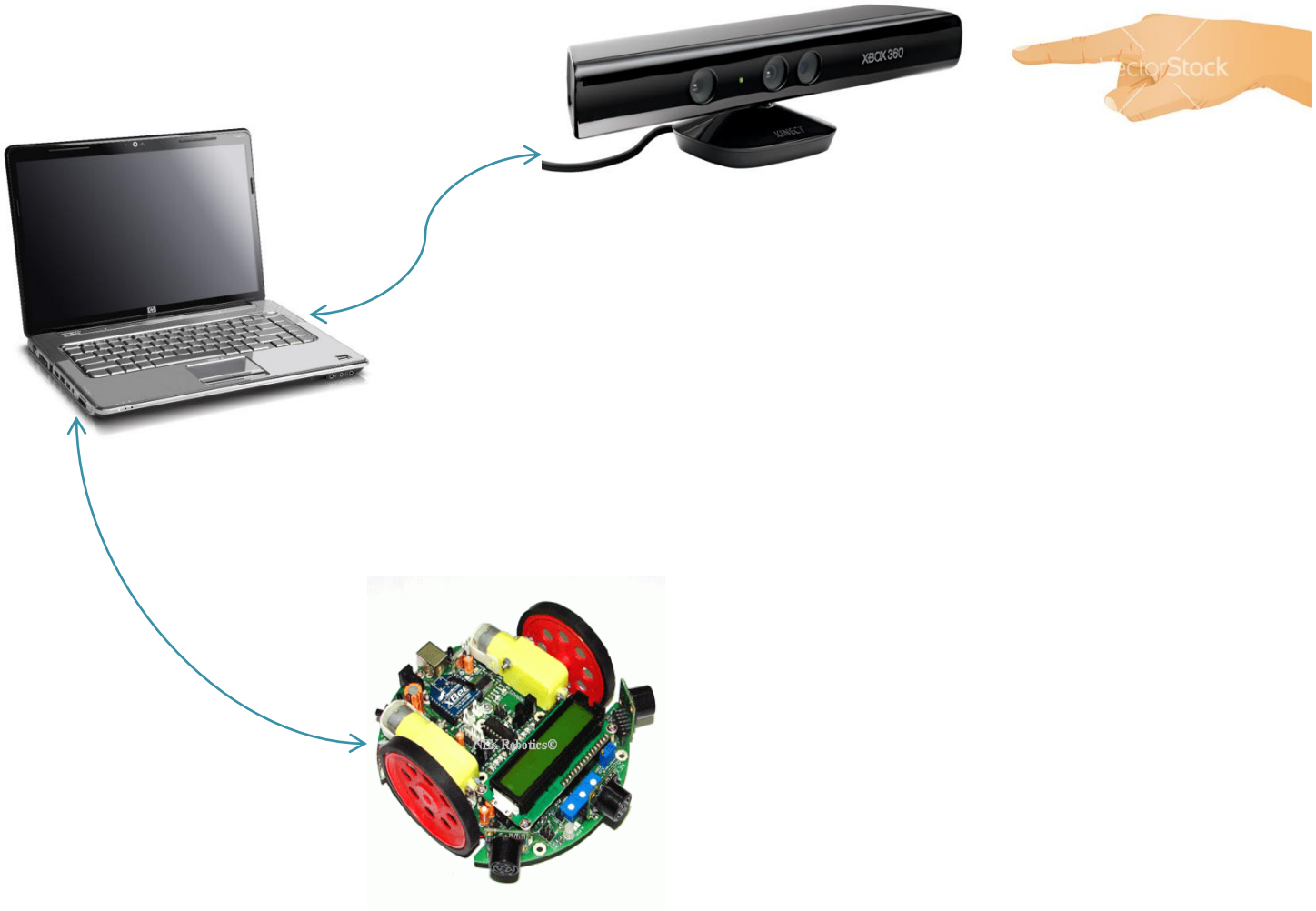
Signal Flow Diagram of the Gesture Recognition System.

METHODOLOGY

Proposed technique to control robotic system using hand gesture display is divided into four subparts:

- A real time hand gesture formation and to Capture frame containing that gesture presentation.
- Extract hand gesture area from captured frame.
- Determine gesture by pattern matching.
- Determine control instruction, corresponding to matched gesture, and give that instruction to specified robotic system.

FLOW CHART..



KINECT KIT

- The Kinect sensor is a horizontal bar connected to a small base with a motorized pivot and is designed to be positioned lengthwise above or below the video display.
- The device features an RGB camera, depth sensor and Micro array microphone running proprietary software , which provide full-body 3D motion capture, facial recognition and voice recognition capabilities.

More on kinect..

- The capability to track the skeleton image of one or two people moving within the Kinect field of view makes it easy to create gesture-driven applications.
- SDK provides Kinect capabilities to developers who build applications with C++, C#, or Visual Basic by using Microsoft Visual Studio 2010."
- This simply allows developers to create Kinect-enabled robots in the Visual Simulation Environment and in real life.

TASK SPECIFICATIONS

- Study of Spark V robot.
- Study of MS Kinect (X-BOX 360).
- To study interfacing of kinect with computer.
- Implementation and testing of motion control strategy.
- To study inbuilt codes in demo files and to develop some entire new codes.
- To start controlling the robot using these codes.

TECHNICAL CHALLENGES

- Identification of gestures.
- Movement of robot with respect to identified gesture.
- Study of features and coding of X-BOX 360.

WORK DIVISION

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- COMMUNICATION by reshma ramanan & chandni kateja.

APPLICATIONS

- Gesture controlled robotic scrub nurse to display medical images of the patient & to reduce the length of surgeries and potential for infection during an operation.
- gesture driven robot arm.

THANK YOU