|  |  |
| --- | --- |
| *Module* | Arduino (Uno) |
| *Inputs* | -9 volt battery  -Bluetooth shield  -Switch  -USB  -IR Receiver |
| *Outputs* | -LED’s |
| *Functionality* | Receive an input of an image from a USB or Bluetooth connection. Also a signal is received from the IR sensors to determine the position of the LED wand and then determines what LEDs to light up. |

|  |  |
| --- | --- |
| *Module* | Image Software |
| *Inputs* | Image(any format, size, etc) |
| *Outputs* | New image size and format |
| *Functionality* | Receives an image and converts it to the size and format needed and then sends it over Bluetooth or USB to the Arduino |

|  |  |
| --- | --- |
| *Module* | Bluetooth |
| *Inputs* | -Bluetooth signal  -Image |
| *Outputs* | -Bluetooth signal |
| *Functionality* | A connection is made of Bluetooth to send images to the microcontroller, to display on the LED wand |

|  |  |
| --- | --- |
| *Module* | USB |
| *Inputs* | -USB dongle  -Image |
| *Outputs* | -USB dongle |
| *Functionality* | A connection is made with USB cable to send images to the microcontroller, to display on the LED wand |

Arduino Uno:

The arduino is the module that controls the arm circuitry. This module accepts 5 different inputs and combines them together to provide the LEDs with the information to display the image recorded. The arduino accepts power from the battery to keep it powered, 1 bit from the switch determining whether the system is on or off, and has the ability to accept images from USB or from the bluetooth shield. The Arduino also takes information from the IR sensor and translates it into useful information to ensure the image is properly presented. The output of the Arduino is a signal telling the LEDs which one needs to be turned on at any particular time.

Image software:

The image software is the software that converts an image from a traditional format into a standard format that can be translated into a set of usable information that will then be transmitted to the LEDs through the arduino.

Bluetooth:

The Bluetooth accepts the image from the image software and transmits it to the Arduino in the proper format. The bluetooth transmits the data from the computer or ipad wirelessly to the Arduino in a format that the microcontroller will understand and translate for the LEDs.

USB:

The USB accepts the image from the image software and transmits it to the Arduino in the proper format. The USB transmits the data from the computer or usb device to the Arduino in a format that the microcontroller will understand and translate for the LEDs.