STUDENT GRIGORYAN VAHE

DR. MANOJ THAKUR **SUPERVISOR**

Linux

Py4j
Swing
Lejos

Java

Hardware

Python

C++

YOLO
TensorFlow
OpenCV
DarkFlow
Evdev
Serial
Tkinter

Multisim
Tinkercad
Arduino
Lego NXT
Wanhao 6

3D printed matrix base piece

Wire.h
Serial.h
I2C

Circuit that controls a matrix

Arduino Pro mini
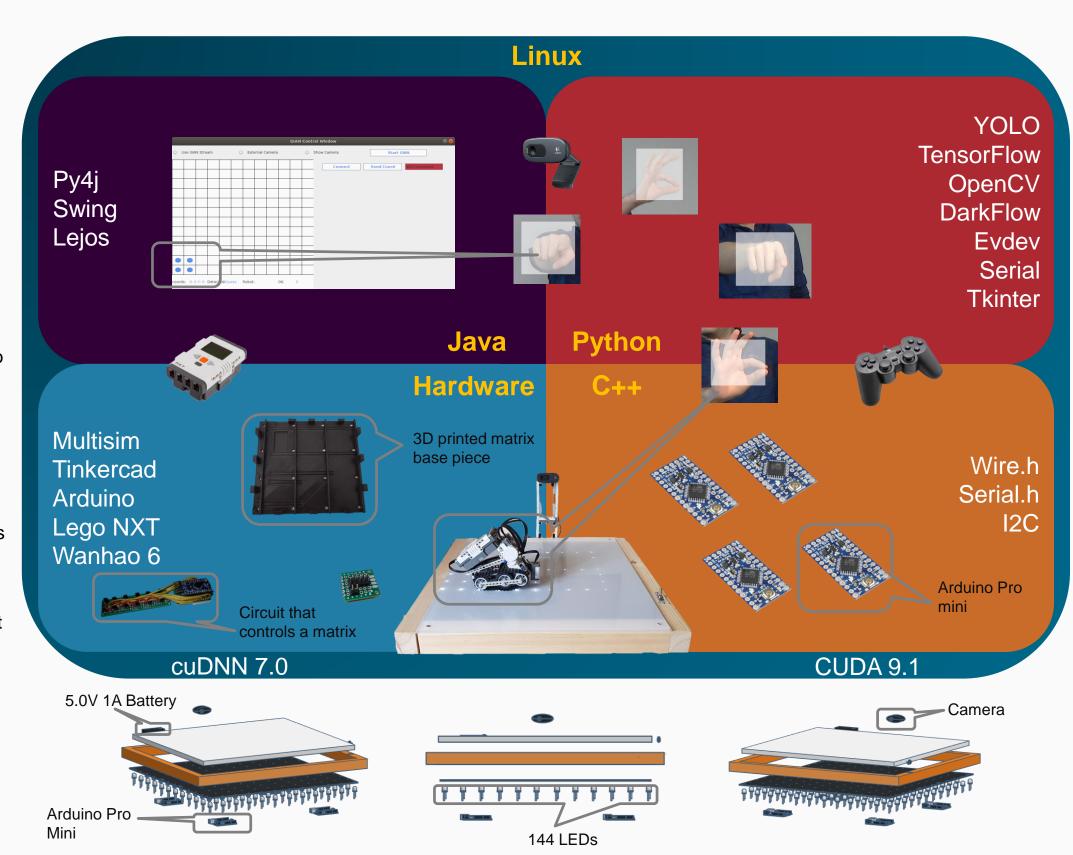
cuDNN 7.0

CUDA 9.1

Abstract

The aim of GIAN is to enable people to intuitively control everyday objects, which are "Internet of Things" devices. Potentially everything can become an "IoT", which means this system can potentially be connected to everything enabling users to control them.

Why GIAN?

Controlling everyday objects with hand gestures can be very useful for manoeuvring heavy items such as wardrobes and sofas, also it can be adopted to be used outdoors to park a car and more. The network of "IoT" devices can work together to achieve all of the above. GIAN can coordinate these devices to make the experience more harmonious.

Experience

A Convolutional Neural Network is used for detecting 2 hand gestures ("Pointing with index finger" and "OK sign"). User can point at an object then show the "ok sign" to select the object, then by pointing at different location user can show the sign again to move the object there.

What is next?

The system was developed with scalability in mind to enable support for greater number of devices. To add different types of devices supporting code must be written, which can use already developed methods that handle the selection and control of units. So the system can be scaled to automate whole house or an office.

5.0V 1A Battery

Arduino Pro Mini

Camera

144 LEDs