https://lh4.googleusercontent.com/cQYwk6bZpPdZ65s3KDxM9Yxl6mgmUi7paL2N9zUSWevPd5LiBzslr9MjoIa_ZgXOXpE57-I4TGK2vqkoh9vXIwkbxwIfX59qUBCafeqaZhRwc_WMDVH04nV5EO3FSPxpwh-SLMaE

**Gokul.P**

Task 12

**8th December 2018**

**OVERVIEW**

Using the Nvidia Jetson TX1 and its exclusive features to design a project, and make a technical report of the project.

**GOALS**

1. Using the Nvidia Jetson TX1 make a hypothetical project which is cost efficient and effective

**SPECIFICATIONS Of the Nvedia Jetson TX1**

This AI supercomputer features NVIDIA Maxwell architecture, 256 NVIDIA CUDA cores, 64-bit CPUs, and a power-efficient design. Plus, it includes the latest technology for deep learning, computer vision, GPU computing, and graphics—making it ideal for embedded AI computing.

GPU-Nvidia Maxwell, 256 CUDA cores

CPU-Quad Arm A57/2 MBL2

Memory=4GB 64 Bit LPDDR4

Ports

* HDMI 2.0
* 802.11ac WiFi, Bluetooth 4.0
* USB3, USB2
* Gigabit Ethernet
* 12 lanes MIPI CSI 2.0
* 4 lanes PCIe gen 2.0
* SATA, 2x SD card
* 3x UART, 3x SPI, 4x I2C

**PROJECT IDEA**

**Using Nvidia Jetson TX1 for controlling the amount of fertilizer / Water sprayed in a garden with different varieties of crops/fruit or vegetable plants.**

We can use Nvidia Jetson TX1 for controlling the amount of pesticides/fertilizers/water that is sprayed on the garden with different varieties of plants which require a different amount of fertilizers.

The Nvidia Jetson Tx1 is mounted on a movable platform (for the bot to keep moving)which keeps moving on the pre planned path, which is around each enclosure containing crops/plants.

The Nvidia Jetson TX1 is fitted with a pointgrey Chameleon , with Tamron 80T4C camera and it is programmed to learn the images of the crops/plants that are grown in the field.

Also it is connected to a network of cameras which is fixed in the garden. These cameras provide information about the approximate no. of plants per unit area or rather it gives a heat map of the plants per unit area which is important to decide how much water/fertilizers need to be sprinkled per unit area by the bot.

The Nvidia Jetson TX1 is programmed to learn the images of the crops/plants grown in the garden(by using image recognition algorithms).All the farmers need to do is stick a picture of the plant at the beginning of the enclosure for the bot to know which plant it is.

The cameras which are fixed in the enclosure passes on the real time information about the no. of plants per unit area as the bot keeps moving therefore the cameras keep providing info continuously to the bot.

**Using an Arduino for controlling the nozzle**

Using the data that is fed to the chip set it communicates with an arduino which is connected to it via a UART connection. The chip provides an approximate rate of flow of fertilizer from the nozzle while the bot keeps moving.

The nozzle is controlled by an arduino via either a solenoid valve or a motor that controls the blockage of the nozzle.

Pros

1. The users workload is reduced.

2. If the information provided is right then the a large amount of pesticide/fertilizer/water can be saved.

3. If the information provided is right then overuse of pesticide on particular plant can be avoided.

Cons

1. Initial setting up cost may be high.