Project ARM  
Physics

## Brief Description

Here we have come up with an robotic arm which can be controlled from distances wired or wirelessly. This arm can be controlled with an app on your mobile phone or laptop. This arm can be used for completing tasks for endless hours as it is a robot it doesn't get tired unlike a human. With further improvements this arm can be used for completing tasks with high precision and remove human errors.

This robot model runs on a small computer built into it and it follows a series of commands to perform tasks. The microcontroller used here is called Arduino UNO and it has been programmed to take the input from the user and then execute the task. The Arduino microcontroller will be working on 5v logic. The user has to provide information to the robot about the task. Once the robot receives information it will simultaneously perform the task.

Robots are really good at repetitive tasks and **this robotic arm is aimed at reducing the task of the farmers and by doing the repetitive tasks like planting crops periodically… just to name a few**. Since the robot can be controlled from smartphone and computer the user has the ability to control the robot and can also switch to autonomous mode. The ARM is supposed to be a low budget device so that it is affordable for anyone to buy it.

## Working Details

As the robot model contains a small computer, it can be controlled by the user by giving it specific commands or can be programmed to do specific tasks.

In the manual control mode the user gets the freedom to rotate the arm and move the robot in any direction the user wants. The arm has four servo motors which rotate at an angle specified by the user. The user will be able to control the device using smartphone app or the GUI on the laptop. The GUI for the controlling of robot is made using Gtk library in python. The microcontrollers are programmed using Arduino IDE software. The user is also able to control the claw that is at the end of the arm to hold the object.

In the autonomous mode the robot repeatedly follow the same order of commands given to it. In this mode the robot will pick a seed from its storage and will drop it in the desired position after this it goes to the next position.

## Synopsis

A Robotic arm that can perform tasks as directed by the user or as written in the program which has been uploaded onto it. The robotic arm makes use of the microcontroller which rotates the servo motors as programmed or directed by the user. Since the microcontroller is open source the user can change the program anytime.The robotic arm is fitted to a small vehicle which makes the arm to displace. The microcontrollers are programmed through the Arduino IDE. The user interface for controlling the arm on laptop is made by Gtk library in python. The project can be made wireless by using either RF modules, Wifi module or Bluetooth transceiver. For the movement of wheel a small IC L293D is used. The project aims to decrease the workload on humans.