

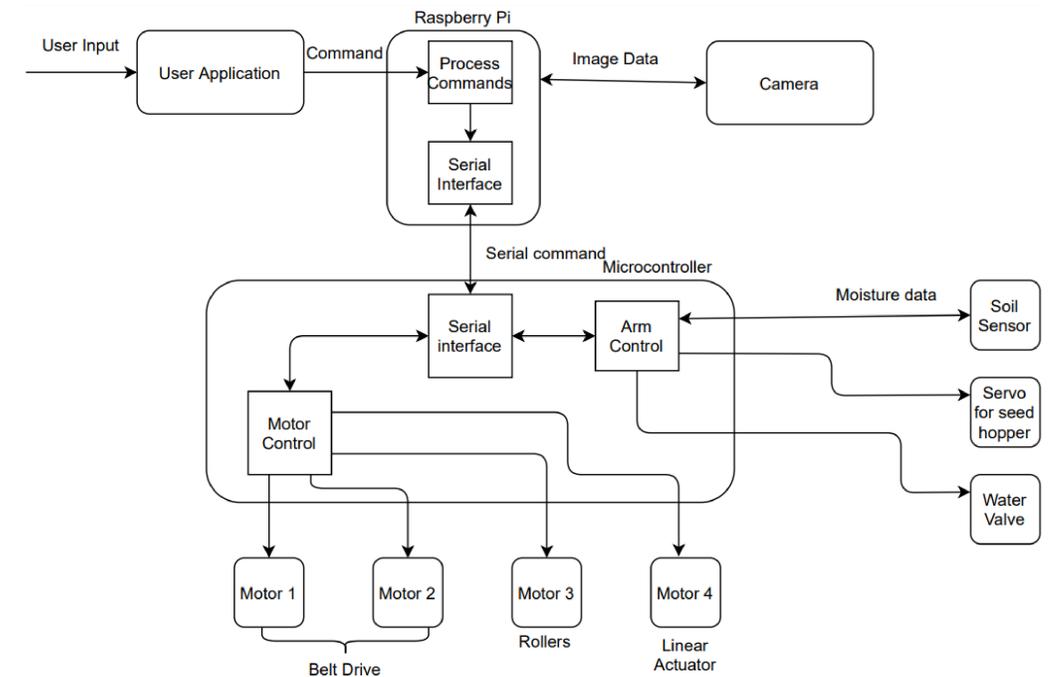
# PLUGSY Gardening System

## Project

The Planting and Landscaping Utility Gardening System for You (PLUGSY) is an automated garden system. The PLUGSY performs many gardening tasks, including planting, watering, and weeding the garden.

The purpose of the PLUGSY is to make gardening more accessible and enjoyable. This will help remove some of the barriers that people experience when first getting into gardening. These include barriers such as limited time, burnout, and lack of gardening knowledge. The PLUGSY helps solve all of these barriers by performing the most time consuming and tedious tasks for the user. In this way, the PLUGSY will be able to help people eat healthier and provide more of their own food by growing it themselves.

## System Diagram



## Methods

The PLUGSY system consists of four subsystems: the gantry, the planting and weeding system, the watering system and the control systems.

- The CNC style gantry moves anywhere in the garden box using stepper motors connected to fixed belts.
- The planting system uses a spike to make an incision in the soil, then a servo to open a valve to a seed hopper, releasing seeds.
- The weeding system detects weeds and cuts them with the planting spike.
- The watering system uses capacitive soil sensors to detect dry soil and uses a water pump to apply water to the affected area.

## Conclusion

Due to time constraints, the size of the project, and Covid-19 restrictions, not every requirement was able to be implemented. We were able to autonomously plant and water lettuce plants. That said, we built this project with further development in mind, so all our features could be added at a later date, along with other features we knew we would not have time to implement, such as support for different varieties of plants. Examples of a future work could include:

- Weed detection.
- Support for more plants.
- More soil sensors for different climates and soil.

