Scope

Statement of Work (SOW)

Interest in microgreens has been exponentially increasing for several years, creating a large demand for these tasty nutrition packed greens. However, consumers wishing to enjoy the health and flavor benefits of microgreens face several barriers. Here are two notable barriers that almost all microgreen consumers face: price and accessibility. This opens up the opportunity to design an automated microgreens environment that will allow consumers to have cheaper access by creating a relatively inexpensive and easy to use machine.

For this project, the team needs to have knowledge about fluids, plant biology, and controls. With this knowledge, the team needs to create a design that responds to the plant growth testing performed. After this, the team can fabricate and test the product to validate its design. As a consumer product the design should be made in accordance with FDA and FCC guidelines. If the project is unable to meet these guidelines due to time/budget restrictions documentation should be provided as to the necessary improvements to pass regulation. An additional constraint that the project should follow is designing for mid/large scale manufacturing techniques, such that production could be scaled in the future. These guidelines will ensure the project will be reliable, manufacturable, and legal to sell as a consumer good.

The project will consist of an enclosure that will house all of the electronics/sensors, pumps/motors, and growing trays. Each component will be modeled in Solidworks. Microgreens need to be given optimal lighting, watering, and climate. These parameters will be controlled and tuned by the team using test data.

The automated microgreens environment needs to be given seeds, water, nutrients, and power. With all of these things, the device will grow microgreens and inform the customer when the product is ready for consumption. There should be minimal maintenance across the device’s lifecycle.

Timeline:

For the first semester of the project, we will be conducting research on the optimal microgreen growing conditions, designing the components for the final design, rapid prototyping, and working closely with the electrical team to integrate the mechanical and electrical components. The second semester will consist of manufacturing and full system testing of the automated microgreens growing environment.