

Automated Hydroponic Gardening System

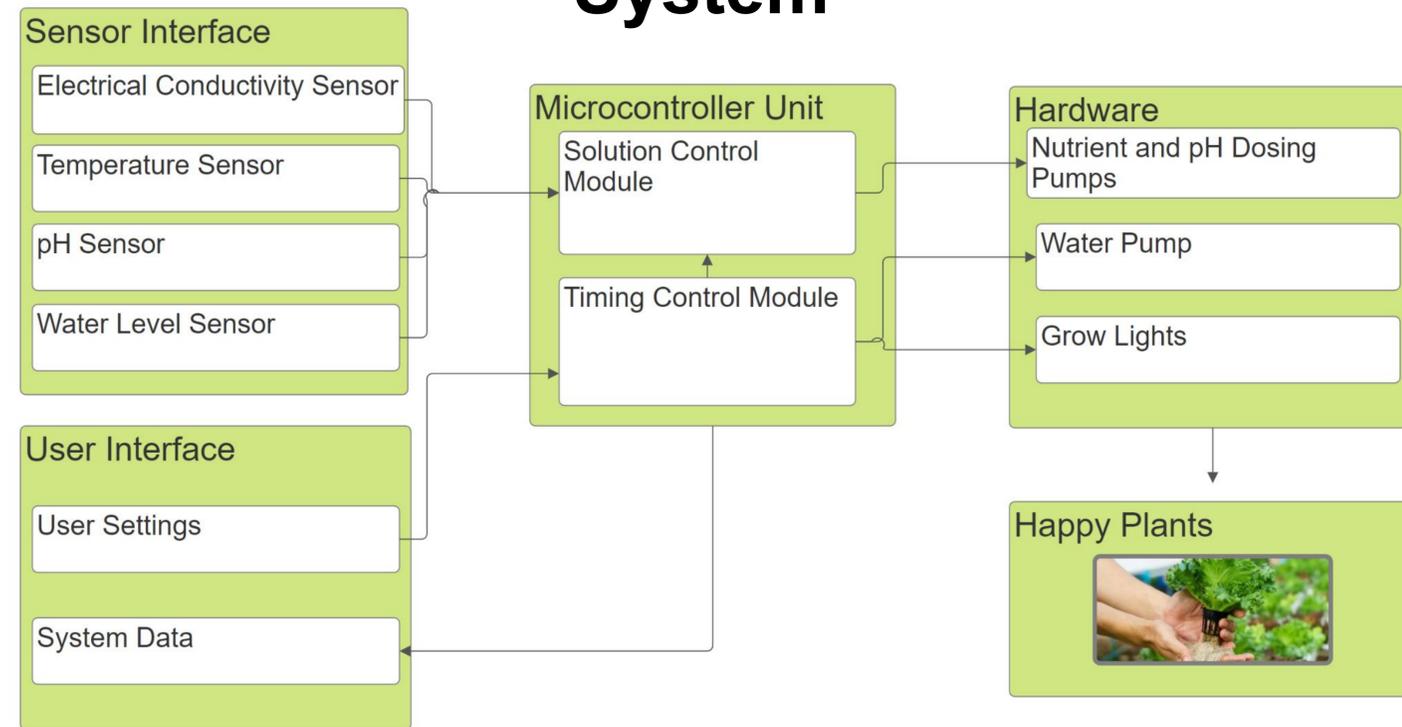
Project

For those living in apartments, growing your own fresh vegetables and herbs year-round can be more trouble than it's worth. From the limited indoor space, less-than-ideal lighting conditions, and potential mess that soil can make, it may seem like your local grocery store is the only option for fresh greens. Not anymore.

We have developed an automatic hydroponic gardening system that:

1. Fits in a 2 ft. x 5 ft. x 7 ft. (depth x length x height) area
2. Runs autonomously for months without needing any user upkeep besides refilling water, nutrients, and pH adjusters
3. Allows the user to adjust growing conditions to enable optimal growing of different vegetables and herbs

System



Methods

- Using cheap materials such as PVC and wood, we designed a snaking-pipe system that leans up against a wall.
- The controls simply add the nutrient or pH slowly (for stability) until the measurement falls within the tolerance.
- All the electronics can be powered through a single outlet for convenience.
- A user interface allows changing multiple settings on the system to accommodate a variety of plants.



Conclusion

- The system grows healthy plants by automatically controlling the lighting, water pump, nutrients, and pH.
- The system enables anyone in an apartment with an open 5 feet of wall space to start their own indoor garden.
- The system facilitates long-term experiments to find optimal growing conditions for different vegetables/herbs.

