Automation in Aquaponics

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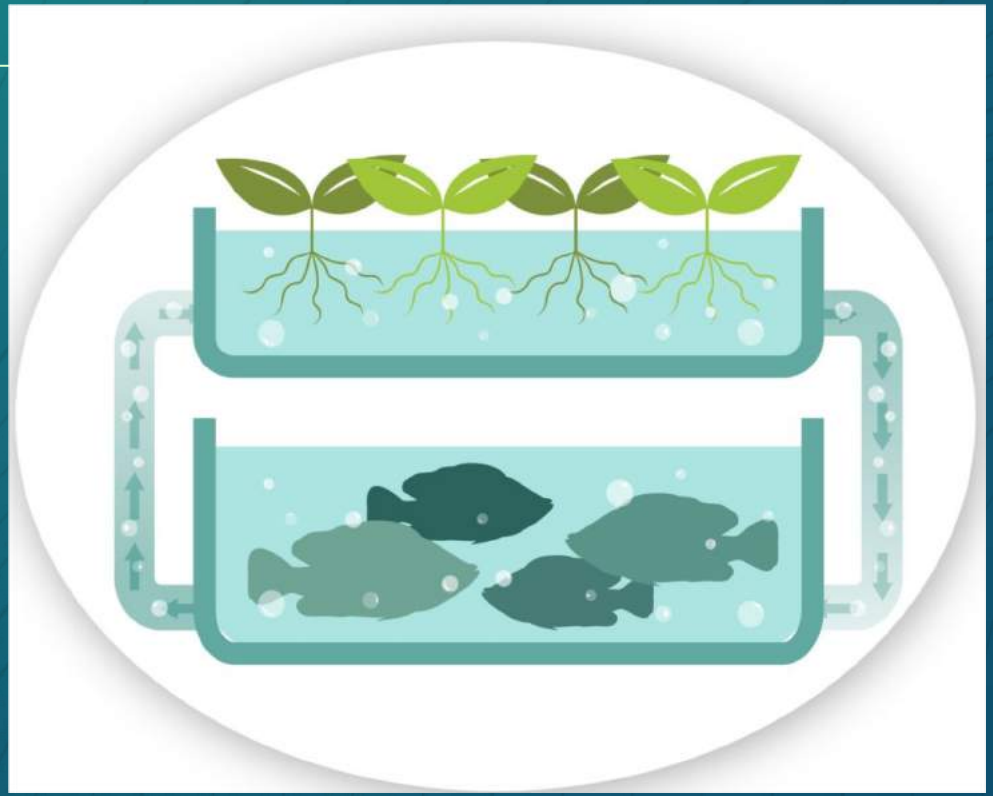
What is Aquaponics?



- Combines aquaculture and hydroponics
  - The farming of fish and the growing of plants without soil
- Waste in fish water serves as nutrients for plants
- The plants filter out the water for the fish
- Depending on the business, either fish, plants or both can be farmed efficiently

Project background/problem identification

- Nate Hamilton visited my biology class and talked about his business
- NewLeaf CEA (his business) grows produce indoors with the aid of nutrients provided by the fish
- Problem
  - Mr. Hamilton didn't know the nutrient levels of his water
  - This led to waste and inefficiency

Solution - automate the process

- Set up sensors to monitor the level of important nutrients like nitrate and nitrite
- Have the sensors send their info to a local server
- Have the server process and parse the data into a usable number
- Relay that data on the server to a phone app so anyone can see the current nutrient level

Projected impacts

~ 3%

Improvement in serving radius

3310.4 tonnes of GHG/year reduction

Problems and improvements

- Acquire working knowledge of novel programming languages
- Implementation
- Further automations
  - Automatically set the pump to cycle based on a set threshold

Thank you for listening!