BloomBox

A Smart Agro-Bot Technology

Why

➢ Projected growth of global population and limited arable land requires highly efficient agricultural practices

➢ Farmers in less developed countries struggle with poor agricultural conditions

➢ Crowded metropolitan areas, such as Japan, cannot produce fresh fruits and vegetables in high quantities

Our Solution

BloomBox seeks to promote sustainable and efficient farming using innovative modern technologies. We believe that everyone should have access to fresh produce. Our goal is to bring about next Green Revolution so that agriculture can take place anytime and anywhere.

How

- BloomBox is an automated and enclosed farming system

- Small individual units allow for a highly portable system that maintains the advantages of indoor farming technology while a modular design allows units to seamlessly combine into one larger assembly

- AI robot arm to take care of plants

  - Precision control over crop maintenance

  - Reduces use of pesticides and environmentally harmful chemicals

- Based on hydroponics and LED lighting technologies available today

  - Multiple harvests year round

  - Overall reduction in electricity use

- Scalable to use for industrial farming as well as individual gardening

Who

➢ The agricultural robotics market is currently valued at $817 million and expected to grow to $16.3 billion by 2020

➢ US farming conglomerates are purchasing and operating foreign land due to lower costs

- Our system would allow farming anywhere

- Reduces cost by increasing energy efficiency as well as decreasing pesticide usage

- Increases crop yield through year round harvests

➢ Farmers in developing nations have lower crop yields due to poor soil quality and pests

- Bloom would provide an enclosed farming area that is independent of local soil conditions

➢ Portable design is optimal for personal use in crowded cities and automated plant grower allows BloomBox to fit into busy schedules

When

Research Phase (2 weeks)

- Agricultural
  - Optimal conditions for plant growth
  - Currently used practices
- Robotics Blueprinting

Development Phase (4 – 5 months)

- Agricultural
  - Hydroponics system that can accommodate a variety of plants in a high density distribution
  - AI plant caretaker software
- Robotics
  - Modular rail system that allows for access to plants and easy expandability
  - AI robotic arm that moves along rails

Test Phase (1 month)

- Plant fast growing lettuce as a proof of concept
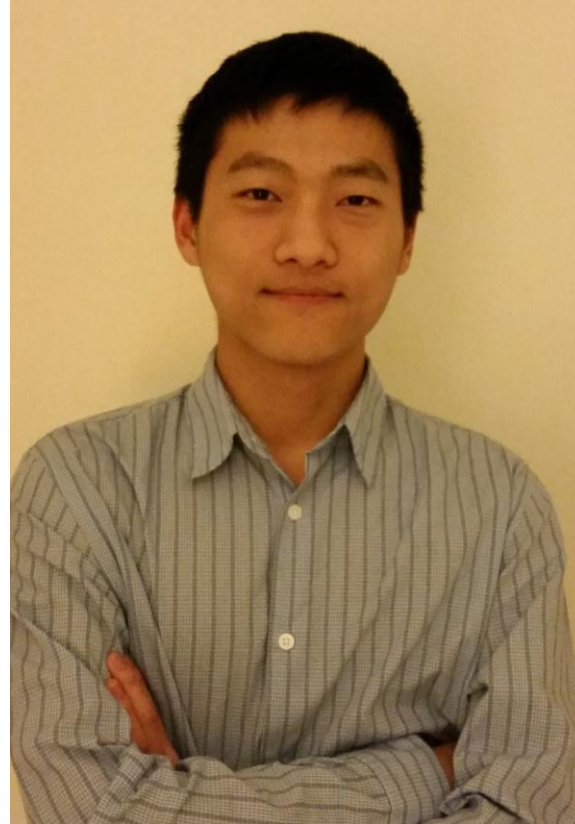- Estimated time to grow : 28 days

Costs

- Seeds
- Frame
- Hydroponics and LEDS
- Trolley and Arm
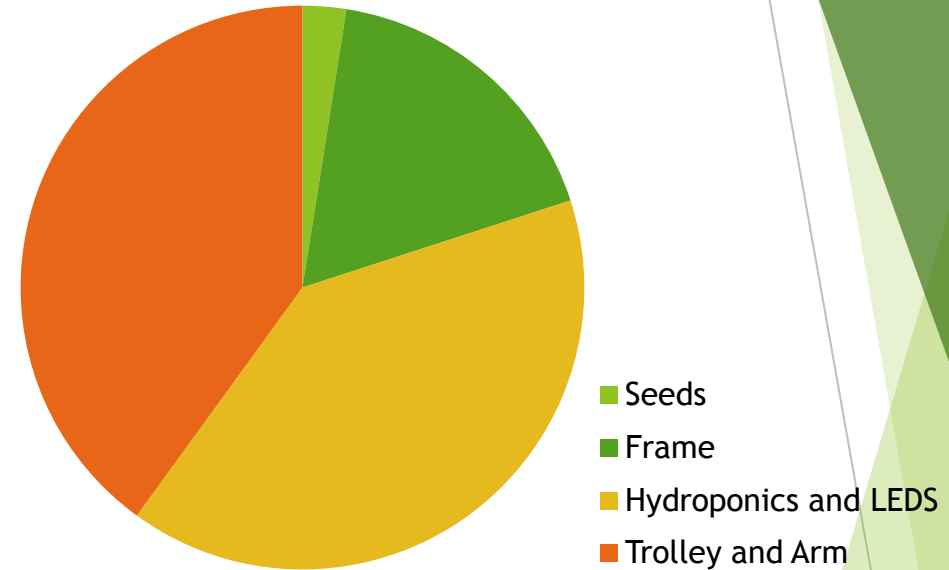
*Microcontroller costs ignored since we have one

Us

Xiaomao Ding

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➢ Biochemistry and Computer Science double major

➢ Agricultural planning and software development

Cameron Zawacki

➢ Hailing from Easthampton, MA

➢ Mechanical Engineering and Computer Science double major

➢ Likes corn on the cob and built a 3D printer

➢ Rail and robotics design architect