

**Bluewater Team: Lance Simons, Fabio Perez, Luciano Davis, Christian Torres, Richard Dang, Javier Ruiz**  
Mr. Summers, Dr.Asianbanpour

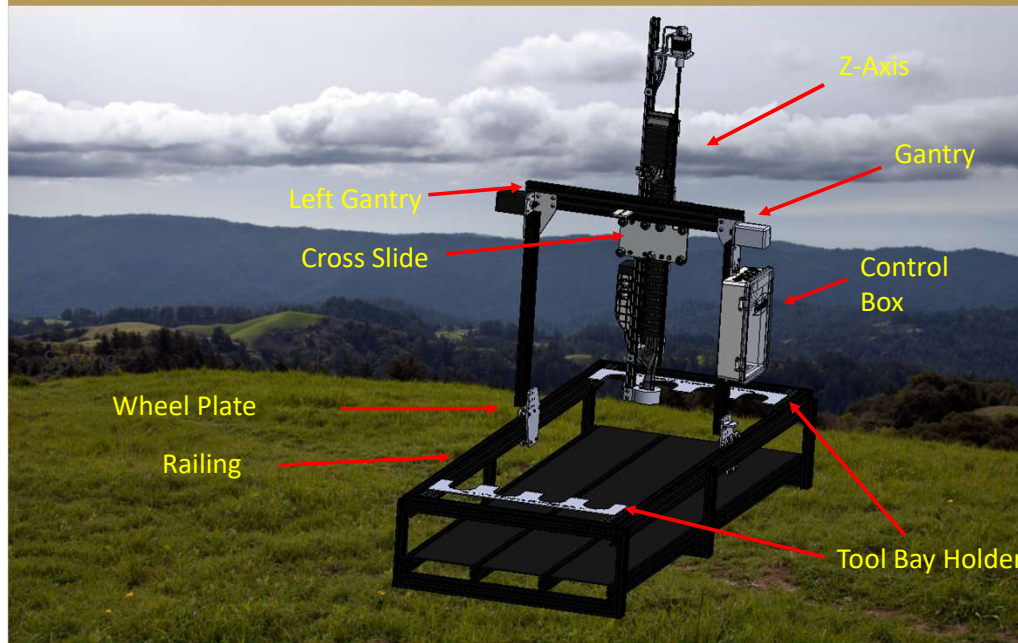
**Problem**

- Optimize a DIY FarmBot Genesis V1.2 to substantially decrease the amount of human labor necessary to operate the machine.

**Modifications**

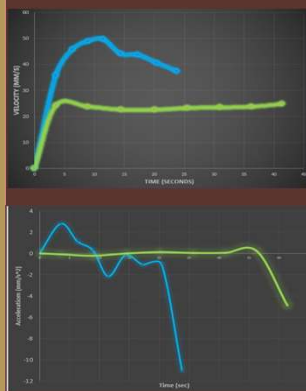
- Software
  - ❑ Movement
    - Optimizing the Farmbot travel path
    - Improved the Farmbot's acceleration and velocity
    - Generated watering path to evenly cover all the growing trays.
  - ❑ Planting/Watering
    - Prebuilt optimized sequences from a touch of a button
    - Reduced the amount of time to fill the FarmBot's garden.
- Design
  - ❑ Seeding Mechanics
    - Linear actuator multi-seed hopper
    - Rotary motor multi-seed hopper
  - ❑ Watering
    - Soil Sensor End-effector
    - Watering End-effector
  - ❑ Harvesting and Monitoring
    - Harvester End-Effector
    - GoPro mount for monitoring

**Machine Design**



**Software Modifications**

**Movement**



❑ The following shows the velocity and acceleration results for speed optimization.

**Key:**  
Original: █  
New: █

- The travel time was cut by about half

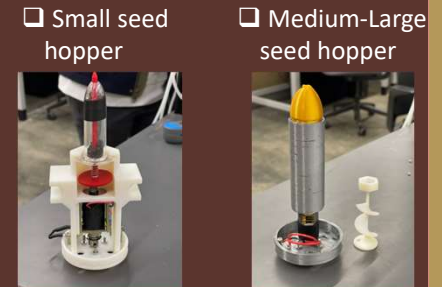
**Sequences**



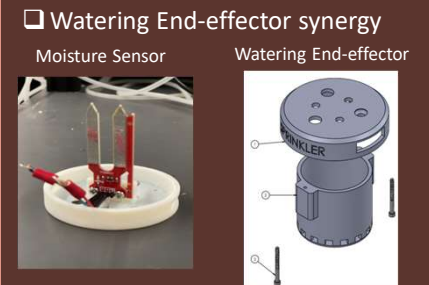
- ❑ Travel Path
  - Using the "nearest neighbor algorithm" the Farmbot moves from one location to the next closest plant
- ❑ Planting
  - The interface allows for a range of sequences for different seed sizes
  - 3-axis programming for precise mapping

**Final Design Modifications**

**Seeding Mechanics**



**Watering**



**Harvesting and Monitoring**

