Alexa Business skills for Bobcat M2 leaders (internal document)
ArduRover, drone cover and Google Earth integration.

Integration with styrofoam based 8 inch seperation 50 mm by 60 mm soil planting of undergrowth level 1 and level 2 species.

Bobcat based afforestation of level 3 + species, with 6 feet + trees.

Given the joystick and drive by wire control of Bobcat M2 , we use sonoff wifi switches and proprietary flex circuit switches.

We design Lambdas for Alexa Skills , integrated with arduRover for task planning using mesh maps from ardurovers SLAM internal representations.

We consider skills for the following tasks.
1. Snow ploughing.
2. Material Handling.
3. Leveling for float placement.
4. Tree transplantation.
5. 3D printing structures with the M2.

We consider task 3, Leveling for float placement.

Drone Cover is used to generate the terrain map and the waypoint boundaries.
Given the boundaries, the mathematical problem is one of horizontal slope determination using laser sensors, within waypoint boundaries.

We consider the following procedures and state machines.
State machine S = [Start, Stop, Plough, Position]
Map of Boundaries [polygon P]
Path Planning Optimization, P = Sum[Rectangles Ri]
ObstacleSensorIntegration for procedure isPloughingPossible() using ground based radar for hidden obstacles.
Vacuum of earth attachment for identification of excavated earth on Boundaries, P and removal by vacuum of earth.

Next we consider task 4 of tree planting using two attachments, an auger and a telescopic tree handler, followed by the loader for soil compaction.

Waypoints define the center of auging and depth of auging.
A secondary assembly holds the tree placed with a telescopic handler.
Automation of soil placement and compaction around the tree.
Boundary(Circle C)

C= Sum[Rectangle Ri]
Compaction state [Compaction, Start, Stop, Position]