

0.0.1 02.10.2015

Time frame: 17:00-19:30

Preview: The purpose of this meeting was to divide all construction works into 4 groups (one group for one teammate) to elaborate modules in parallel. After that, we wrote the technical specifications for each group of modules to help collaborators follow the requirements.

Technical specifications for modules:

1. Chassis
 - 1.1. Carriage consists of two lengthwise beams 41.5cm connected at the back. All other modules will be mounted to this base.
 - 1.2. Wheel base consists of 3 pairs of standard wheels. All wheels at one side are linked to each other and move together.
 - 1.3. Wheel base is powered by 4 dc motors (2 at one side).
 - 1.4. Motors should not interfere with the bucket, which will be placed in the front half of the robot.
 - 1.5. While the robot is climbing the ramp, no construction elements but the wheels should be touching the surface of the ramp.
2. The mechanism that turns the elevator
 - 2.1. A continuous rotation servo will turn the worm gear.
 - 2.2. It should be mounted on the side beam of the base.
3. Elevator
 - 3.1. Elevator consists of retractable construction profiles which connected with help of special elements. The shape and size of these elements should be fit with grooves in profiles.
 - 3.2. It should be mounted on the turning mechanism.
 - 3.3. Length of the elevator should be enough for scoring debris into high and middle boxes from low zone and starting pullup from the middle zone.
 - 3.4. A thread and block system will provide lifting of elevator.
 - 3.5. The servo that turn clear signal should be fixed on the top of the elevator.
 - 3.6. The hook for pulling the robot up will also be mounted on the top of the elevator.
4. Bucket
 - 4.1. The bucket will be fixed to a beam turned by a servo on the top of the lift.
 - 4.2. Free space inside the bucket should be 10-14cm at width, 15-17cm in length and 7cm in height. It should be spacious enough to contain 5 cubes of 3 balls.
 - 4.3. To prevent gathering more than five cubes at once, the bucket will narrow down to the back (cubes will settle as $2 + 2 + 1$).
 - 4.4. The bucket's movement should not interfere with debris gripper.
 - 4.5. The entrance hole of the bucket should have the same height and width as the internal space.
 - 4.6. Bucket should have a turning flap above the entrance which can prevent balls from scoring not on demand. Additionally, the flap will stop debris from falling out of the bucket when it is be flipped over.
5. Gripper
 - 5.1. Gripper consists of 2 rotating blades which form a 180° angle.
 - 5.2. Gripper is powered by 1 or 2 continuously rotating servos.
 - 5.3. Gripper is placed in front the bucket. Blade width should match the bucket entrance.

- 5.4. Space between axis and field is enough for unhindered passage of balls.
- 5.5. Gripper should not pose any obstacle for bucket motion.
- 5.6. At both sides of the blade's working area placed slopes, which are tapering to the bucket.
- 6. Scoring autonomous climbers + pushing button
 - 6.1. The mechanism for scoring autonomus alpinists will be placed at the front right side of robot. It's definite position will be determined after discussion of autonomus strategy.
 - 6.2. Mechanism consists of F-shaped beam powered by standard servo.
 - 6.3. At the end of top beam is a bucket for 2 alpinists. The bottom beam pushes the button.
 - 6.4. Module should not interfere with gameplay after the autonomus period ends.
- 7. Mechanism for extracting lift and pulling
 - 7.1. Two reels that are rotated by 4 DC motors.
 - 7.2. The rope for pulling and line for extracting lift are in different reels. When the line wound the rope unwound and in other way.
 - 7.3. It should be mounted on the back beam of the base.

Responsibilities for each module:

- 1. Carriage and wheel base -
- 2. Bucket and elevator -
- 3. Gripper with slopes -
- 4. Mechanism for scoring alpinists -

Additional comments: Now our team is ready to proceed working on next objective: designing modules.

