Multifunctional Mobile Robot

Team 23

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Aim: To create a highly-mobile robot capable of competing in five athletically-inspired events

Motivation

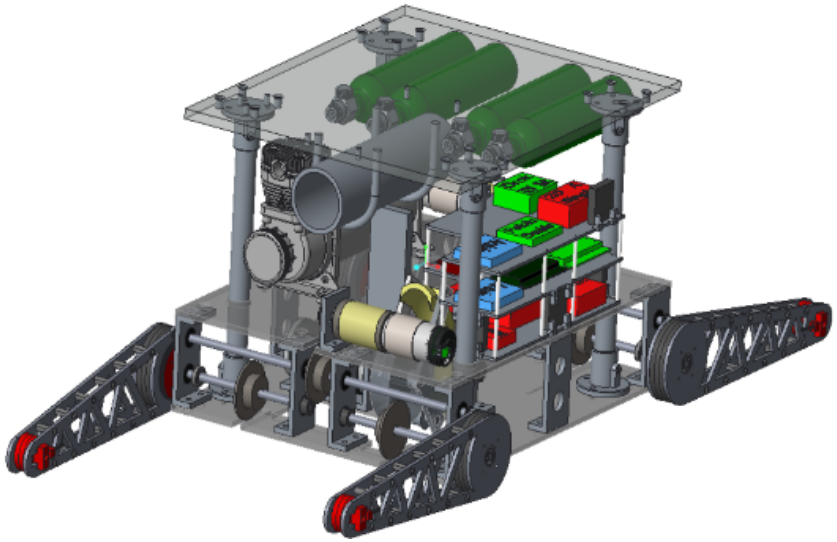
The 2016-2017 ASME Student Design Competition requires a design of a robot capable of lifting, throwing, and hitting an object while still maintaining a high degree of mobility.

Competition Scope

The robot must compete in five separate events:

- **Sprint** – Touch a wall 10 meters away and return to start, score based on time
- **Throw** – Launch a tennis ball along an axis, score based on distance
- **Climb** – Climb and descend a set of three steps, score based on time
- **Lift** – Lift a weight vertically, score based on mass and distance of object lifted
- **Hit** – Hit a golf ball from the ground, score based on distance and accuracy along axis

Design



Design Approaches

- **Sprint**: High power, high rpm motors
- **Throw**: 200psi air cannon
- **Climb**: Highly dexterous “chaos frame” design
- **Lift:** High yield pneumatic air jack
- **Hit**: Pitching wheel system

Future Work

- Continue assembling
- Test robot for performance and programming issues

Challenges

- Efficient approaches within space requirements
- Finding sufficient power sources

Constraints

- All components must fit within a 50cm x 50cm x 50cm sizing box
- All stored energy such as springs and compressed air used in the competition must be conservable and restored to its original form by the end of each event