

TEAM 1511: ROLLING THUNDER

2012 Robot Penfield, NY

Thunderstorm

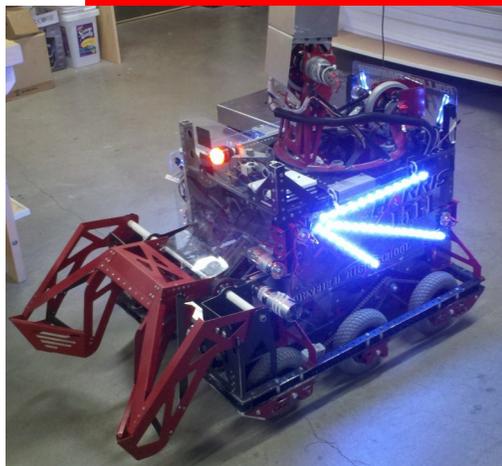


Shooter:

- ◆ 280° turret with variable speed, dual shooter wheels
- ◆ Can adjust distance and backspin by individually controlling wheels

Capabilities:

- ◆ Score in all hoops
- ◆ Can shoot up to half court
- ◆ Push down or steady the bridge
- ◆ Easily crosses barrier
- ◆ Nearly impossible to push or slide on bridge
- ◆ Low center of gravity to help balance on bridge and when crossing barrier



Conveyor:

- ◆ Individually controlled 3 stage conveyor
- ◆ Ability to control balls and avoid penalties
- ◆ Always keeps balls ready to shoot
- ◆ Ability to reverse balls out of system

Bridge Manipulator:

- ◆ Designed to be able to push down bridge while directing balls on bridge into robot
- ◆ Can clear balls from under bridge
- ◆ Used to help collect balls when driving around field by funneling them

General:

- ◆ CAD-tested parts are designed by students for ruggedness and strength under the toughest of impacts
- ◆ Riveted and welded parts allow for a light, fast robot frame that maintains the strength of classic bolts

Programming:

- ◆ Auto-targeting with shape recognition with camera
- ◆ Conveyor belts are automated to properly control balls without driver input
- ◆ Wings ramp power to match force needed to push bridge

Collection:

- ◆ High speed beater bar ball intake
- ◆ Very quick ball acquisition

Autonomous Modes:

- ◆ Dead reckoning modes
- ◆ Can shoot balls from the key
- ◆ Working on being able to push down bridge

Electrical:

- ◆ Lights to signal ball count, wing position, and competition bridge
- ◆ Optical limit switches for turret control
- ◆ Optical sensors to control balls in conveyor system
- ◆ Encoders with PID loop on shooter wheels to control speed

Drivetrain:

- ◆ 6 - 8" pneumatic wheels (tires)
- ◆ 4 CIM motors with 2 AndyMark CIMple transmissions, geared for 12 fps
- ◆ Designed with skid plates to overcome barrier

Control Box:

- ◆ Custom control box, machined from Harris, designed by students
- ◆ Custom circuit to emulate a fourth joystick using Freescale tower
- ◆ Displays a camera feed to assist targeting

