FIRST Robotics Team 1756 Argos

About Us:

Argos was founded in 2006 and is based out of Limestone Community High School in Bartonville, Illinois.

We learn engineering, manufacturing, and programming skills while designing and building the robot with professional mentors to compete each year in the *FIRST* Robotics Competition.

Mission:

Our mission is to grow individuals by teaching engineering, programming, manufacturing, and design principles through our FRC program while promoting STEM to our local community through outreach opportunities and by supporting the *FIRST* programs using a collaborative process.

Sponsors:

Our founding and primary sponsor is Caterpillar Inc. who provides most of our financial and mentor support.

Limestone Community High School allows our team to build out of the wood and metal shops as well as assisting with transportation to our away events.

We are also sponsored by several local businesses that specialize in custom engineering and manufacturing that provide us a combination of financial, mentor, and fabrication support.

Brand:

The Argos brand extends beyond our uniform that features black and yellow striped pants to include our powder-coated robot and pit design.

We chose black and yellow as our team colors to further our partnership with our founding sponsor, Caterpillar.

Outreach:

We are deeply seeded within our community and use our skills gained to promote STEM while helping others:

Easter Seals – Penguin Project

In 2018, we piloted plasma cut Argos head keychains as giveaways at events. That led to designing penguin key chains that we manufacture and sell to support the Penguin Project that empowers children with special needs.

OSF Hospital – GoBabyGo!

We participate in semi-annual workshops to customize ride-on cars for children with spina-bifida.

Peoria Riverfront Museum

Each year, we demo our robotics program at 'RoboRumble' to promote *FIRST* and STEM to thousands within our community.

Girl Scouts

We are partnered with our local Girl Scout troop to help with the robotics badge. This has expanded our STEM outreach to include a rural and underserved community of minorities.

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Climber:

-Pneumatically actuated ratchet for dynamic latching

-Central hook using custom modified rack and pinion elevator

Launcher:

-Turret with 2 bound 6” wheels using Limelight vision processing for automated lateral targeting

-Modified rack and pinion hood integrated with vision processing and wheel speed for trajectory and distance control

Intake/Hopper/Elevator:

-3 solid roller full width intake pneumatically actuated over bumper

-Bi-layer wheeled hopper that provides continual control of game pieces into single stream elevator

-Automated feed from hopper to elevator using Time of Flight (ToF) sensor for ball indexing

-Belted elevator with gearing to regulate lateral and vertical segments

Drivetrain:

-Tank drive with drop center for improved turning radius

-Custom designed single speed gearbox

Controls:

-Fully integrated intake, hopper, and elevator system that indexes game pieces into single stream

-Time of Flight (ToF) sensor at transition from hopper to elevator provides automated incrementation within the elevator

-Limelight vision processing provides inputs for tracking the vision target and automatically adjusts hood, turret, and wheel speed

-Single button control for target lock that includes a vibrating controller feedback loop to the operator

-Variable elevator feed based on distance detected to automatically counteract velocity loss and act as a virtual flywheel

Control Panel:

-Compliant wheel driven by a bag motor fixed to climber crossbar

-Fully automated rotational and color control

-Bristles dampen ambient light to provide consistent environment for sensing colors on wheel