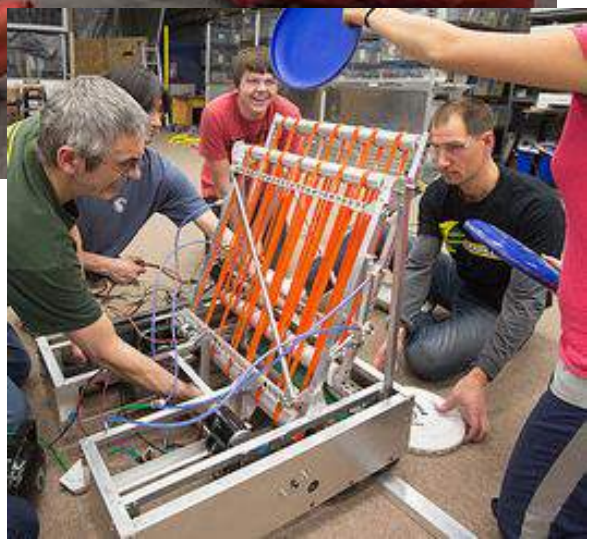
Cyndia Cao

For Inspiration and Recognition of Science and Technology Robotics Competition 2013 – Ultimate Ascent

Robots score Frisbees (either received from a human player or picked up from the ground) into 2 or 3 point goals in the air. In the end game, robots that climb the towers gain bonus points based on which level is achieved (10 per rung).

- Detroit District Champions
- Detroit Delphi Excellence in Engineering
- Troy District Champions
- Troy Rockwell Automation Innovation in Control
- Bedford District Champions
- Bedford Rockwell Automation Innovation in Control
- Michigan State Champions
- World Championship Overall Finalists
- World Championship Archimedes Division Champions



I designed the conveyor system (the belting and rollers above). When the match starts, four bar linkages controlled by pneumatics extend the back conveyor into loading position. Right inside the back bumper is a floating high-speed roller (green) that pulls Frisbees into a back wall made up of belting. The two mechanisms contort enough to allow the Frisbee to make a ~100° flip into the main conveyor system. Once the Frisbee reaches the top, a plastic piece pushes it over onto the top conveyor which uses the friction of the belting to carry Frisbees into the storage. See it in action on YouTube: http://www.youtube.com/watch?v=QK6aOQ6TAfc&list=UUhlSOSCw6eJFArGvr8uSWxg&feature=c4-overview

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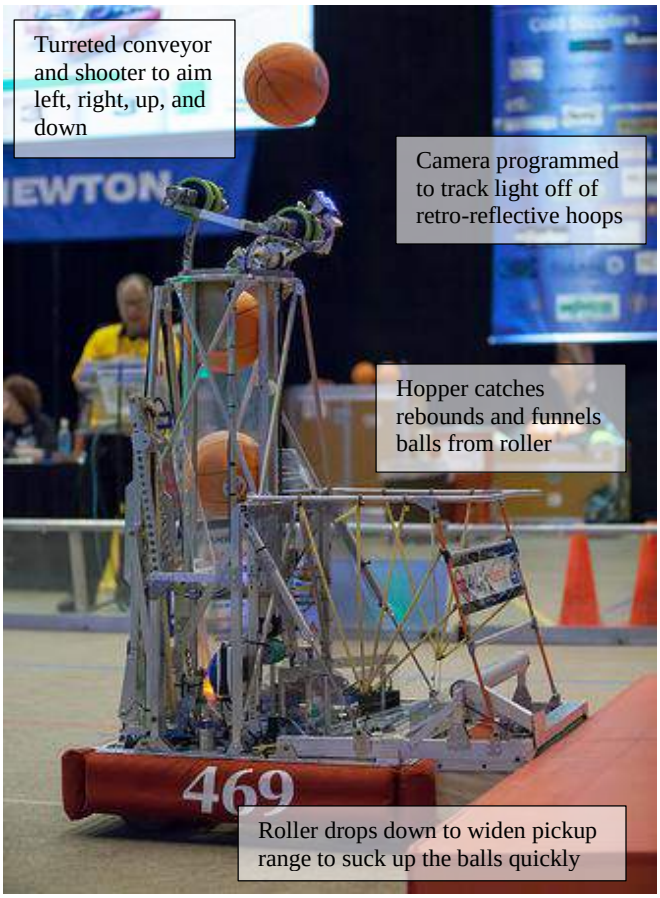
FIRST Robotics Competition 2012 – Rebound Rumble

Robots score foam basketballs into hoops at three different levels and end the game by balancing two or three robots on the bridges in the middle of the field.

- Waterford District Champions
- Waterford Rockwell Automation Innovation in Control
- Detroit District Champions
- Detroit Delphi Engineering Excellence
- Troy District Champions
- Troy Delphi Engineering Excellence
- Michigan State Champions
- Michigan State Championship Rockwell Automation Innovation in Control
- World Championship Newton Division Semi-finalist

I worked mainly in assembly and testing and led the electrical team. I led team scouting from the stands at competitions using macros in an Excel database that I developed in my freshman year (40-100 teams, 100 matches, 6 robots per match).



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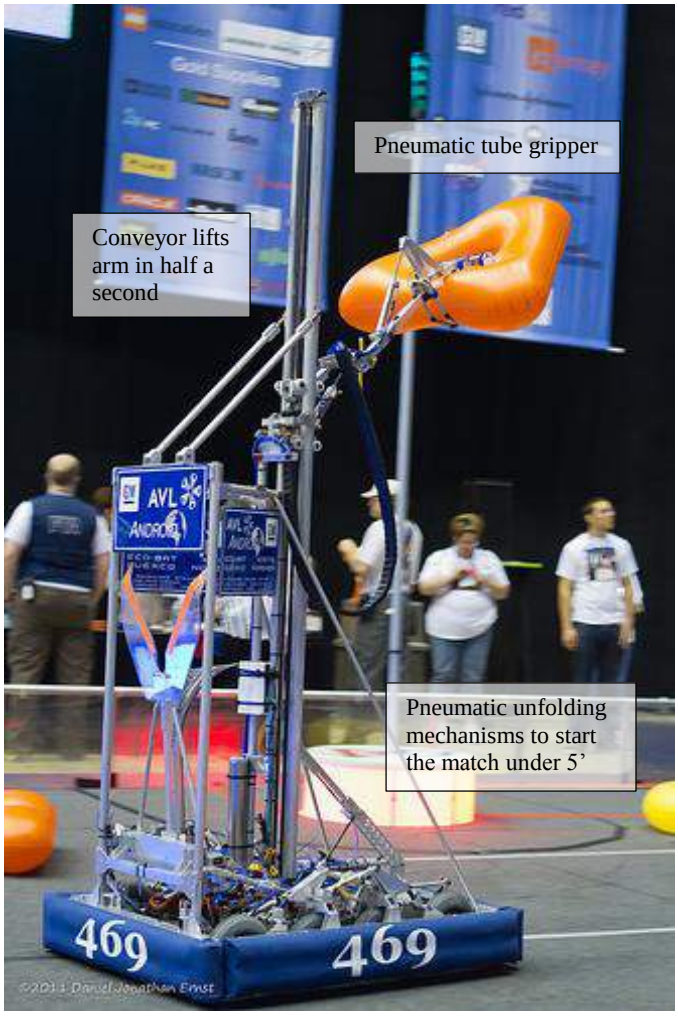
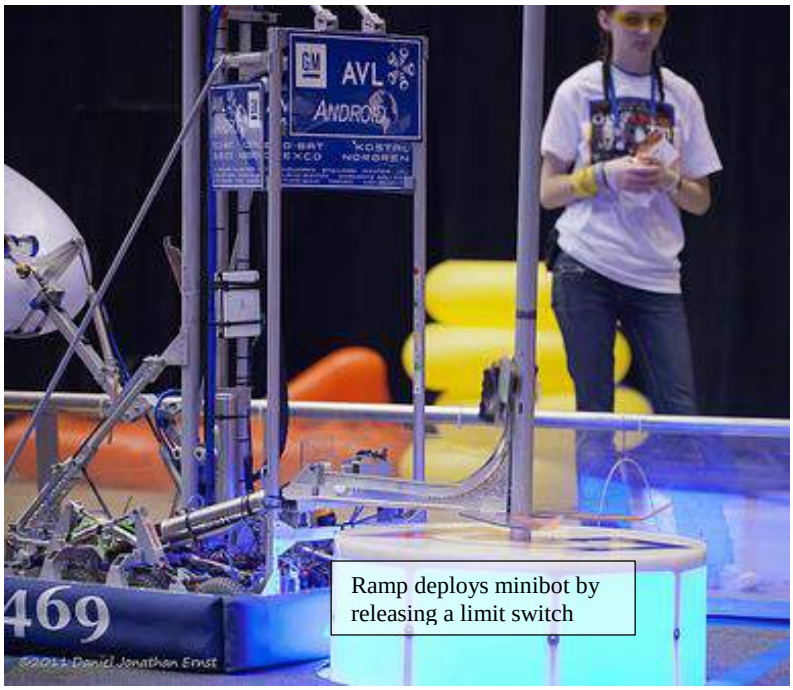
FIRST Robotics Competition 2011 – Logo Motion



Robots hang triangular, circular, and square tubes on a rack with six pegs across and three down. To double the points of the row they make the FIRST logo. In the last 15 seconds robots deploy "minibots" to race up the pole.

- Detroit District Finalists
- Detroit Xerox Creativity Award
- Troy District Champions
- Troy GM Industrial Design Award
- World Championship Galileo Division Finalist



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FIRST Robotics Competition 2010 - Breakaway

Robots score standard soccer balls into two goals on each side of the field and the balls reenter the game via the ramp across the top. Robots hanging off of the tower receive bonus points.

- Cass Tech District Champions
- Troy District Champions
- Troy Engineering Excellence
- Michigan State Champions
- Michigan State Championship Engineering Excellence
- World Championship Overall Finalist
- World Championship Curie Division Champions
- World Championship Xerox Creativity Award

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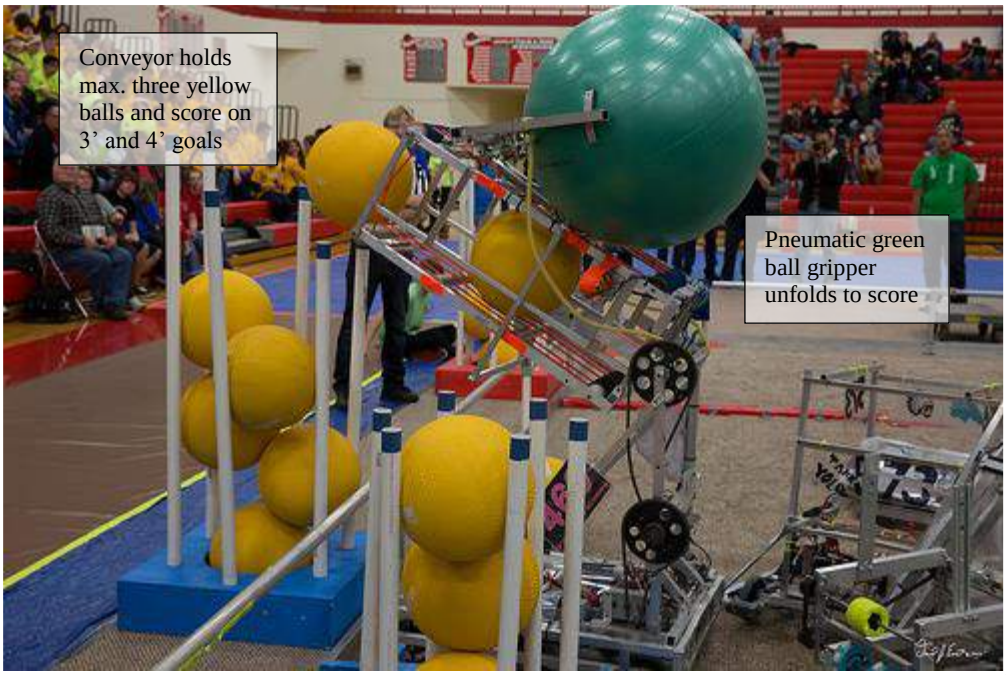
Oakland County Competitive Robotics Association 2012

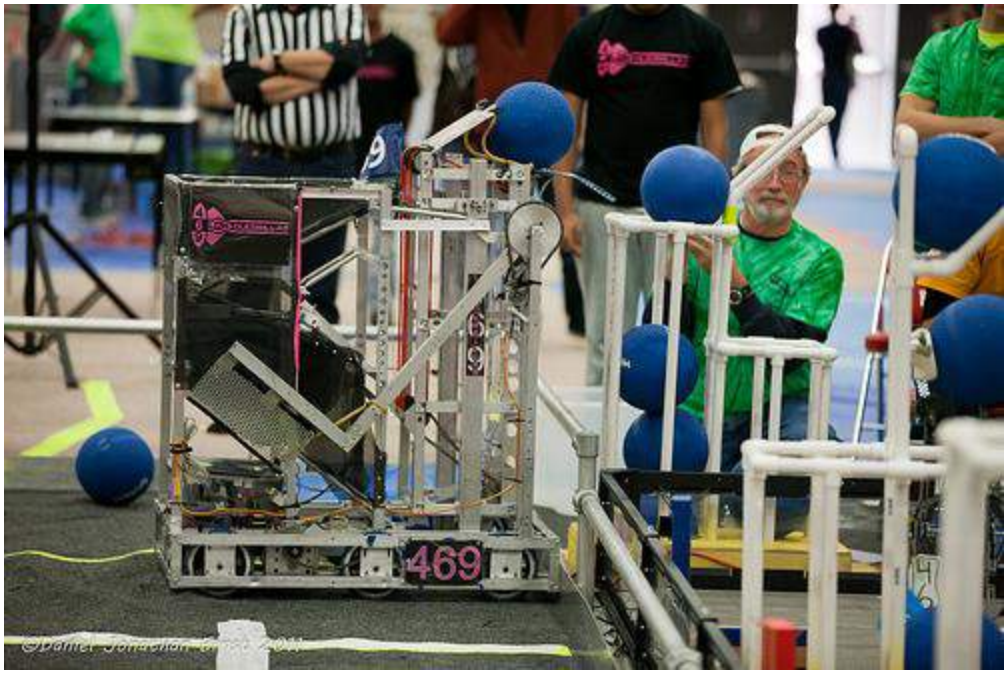


Robots score 13”balls on stationary 4’ and 5’ goals and mobile 3’ goals. Scoring green 25’ balls doubles the points in a goal.

- Semifinalist

I worked on the yellow ball conveyor system – everything attached to the arm pivot except for the green ball gripper.

OCCRA 2011



Robots score to have dominance over towers on a tic-tac-toe style board, receiving a bonus for getting three in a row.

- Finalist

This picture only shows our robot scoring on the low goals. There were 3”, 4”, and 5” goals and I designed the telescoping lift system to raise the conveyor.