



BLITZ BITS

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SPECIAL POINTS OF INTEREST:

- **Colorado Regional Competition, March 27-29, 2008**
- **FIRST Championship, April 17-19, 2008**



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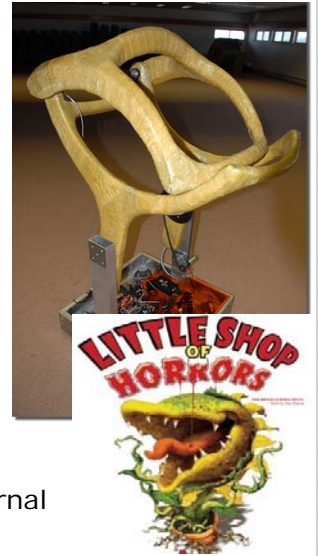
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Meet Audrey III

The robot designed and built by Team Blitz for this year's First Robotic Challenge "Overdrive" is Audrey III, named after Audrey the Venus Fly Trap in Little Shop of Horrors. Like Audrey, this robot will snatch up the game ball and with locked jaws, speed around the track scoring as many points as possible. When necessary she will spit the ball high over the rack only to recapture it on the other side and continue her mission without mercy.

Audrey stands on an aluminum box chassis. She is 58 inches tall and, being well fed, weighs a stout 119 pounds. Her hollonomic (omni) drive system allows her to move quickly and smoothly around the oval track. An internal gyro control system provides the ability to rotate as she moves down the track. The gyro acts as a virtual turntable, allowing her turn and capture the game ball while continuing in a forward motion.

Infrared sensors provide positional data to the onboard computer allowing Audrey to swoop in and grasp the ball in her strong rigid jaws. Audrey's complex programming and optical shaft encoders use PID control methods to provide fast and accurate positioning of the game ball during the game. We are hoping Audrey will chomp into this years competition and launch us to the world competition.



Colorado Regional Competition

Team Blitz will be heading to the Colorado Regional competition this month. The competition will be held in the Ritchie Center at University of Denver. Teams will have Thursday the 26th to unpack the robots and set up their work pits. Teams can run practice matches throughout the day. Friday's venue will primarily be elimination rounds for seeding. After completing the elimination rounds 8 teams of 3 robots will be selected to compete in Saturday's semifinals and final rounds. The winning teams will continue on to the FIRST Championship in Atlanta, Georgia in April.

At the FRC championship, Team Blitz will be in the running for several other awards offered through FIRST and a variety of corporate sponsors. These awards include the Chairman's Award, Engineering Inspirational Award, Rockwell Automation Innovation in Control, GM Industrial Design, and Chrysler Team Spirit Award.

This year our
teams
competition
give-away
items will be
logo buttons
and tattoos.

Team Blitz at 2008
Open House with
the 2008 robot



Welcome New Members!

Dan- I am a 12th grade home-school student. My favorite subjects are math and physics. I have participated on a competitive math team in 2004, 2006 and 2007 at Colorado State University's Math Day competition. I have organized and operated my church's youth group's snack bar from 2001 to 2007. I was part of the stage crew at my church's Easter play (we had ten performances). I earned my Eagle Scout badge on February 1, 2006. For my Eagle Scout project I made a Discovery Trail in a Broomfield park. I planted ten additional trees along an existing trail, I made a planet path with the relative distances of the planets marked along the path and several Colorado State Emblems including a representation of a Stegosaurus (the state fossil) foot print. Broomfield posted my project flyer about half way down on their web site <http://www.broomfield.org/openspace/>. My goal is to major in Applied Mathematics and study Math Modeling in college. I am considering a second major in Applied Physics. I am excited to write an excellent program for our robot this year.

Andy- This is my 3rd year with FIRST; 2 years on First Lego League and currently on FTC and FRC teams. I have been enjoying the increased challenge on the FRC team. My highlights for the season were working in the machine shop and doing the animation. I've learned so much from our mentors and very grateful that they've shared their time and incredible knowledge with us. Doing the 3DS Max animation has been an amazing learning experience and I now realize all the time and effort that goes into even the simplest animations.

Chris- Robotics: stimulating learning, increasing comprehension of engineering, and creating a new environment to meet new friends. In just one year, I went from spelling pneumatics as newmatics, to actually being able to create part of a system. Also, I was able to use tools I never would have been able to use otherwise. These include a band saw, table saw, and drill press. I also met several people who have the same interests as I do. Even going to a prestigious school, I can't walk down the hallway and meet other hopeful engineers. Also I had the pleasure of meeting some other boy scouts I can now attend summer leadership camps with. Robotics was the best use of my free time.

Old Members Speak Out

Jared- First as team captain I would like to say that this year's FIRST robotics build challenge was an exceptionally fun and enlightening experience for me as well as the team in general. This year's competition as well as our experience from the past competition, inspired our team to create a highly competitive and exceptionally well designed robot. Due to past competitions we decided to build our robot in way such that it would be maneuverable as well as exceptionally durable. We were able to accomplish these goals by using a holonomic drive system (Omni-directional wheels), allowing our robot to travel in any direction possible. Due to requirement for strength we designed our robot out of high strength aluminum plate and light yet strong Kevlar composite. This allowed our robot to be strong yet maneuverable. I would also like to share the experiences I had while building our FIRST robot as they have provided me with a significant amount of informational knowledge. Due to the accelerated time span of the build session help was needed all the time; meaning that I was able to learn how to operate a variety of machines such as a CNC milling machine, and a lathe. Also significant is that due to the complexity of our robot I was able to learn a significant amount on engineering principles and ideals. Overall this year's build cycle was extremely informative and fun. I am looking forward to the regional competition and next year's challenge.

Hailey- This year I worked mostly on the chassis. During the designing period I learned about the differences between the omni wheel and other wheels. Because of the fragility of our robot last year we decided to go for a more robust robot. Our chassis this year was almost the same as last year, with the exception of the walls which were higher. We covered the 'arm' in Kevlar to make it robust. This robot is also extremely efficient.



**Our 2008
robot**

*Last year
we won
the rookie
all star
award and
then went
to worlds
in Atlanta,
Georgia.*

Conifer Robotics Expo 2008

A goal of FIRST Robotics is to introduce technology into our community. On March 15th, 2008, Team Blitz did just this. We hosted a local Robotics Expo in one of our many meeting places, Our Lady of the Pines Church Meeting hall. The event showcased the three levels of FIRST Robotics: including last year's FIRST Lego League (FLL) playing field and components, several premade VEX robots, and our FRC robot from our Rookie year. The event was well attended and generated considerable interest in our team and Robotics among the community. The attendees enjoyed themselves while driving the VEX robots on a field and maze, and being shown how the FLL Lego robots worked and met the varied challenges. The team also did several demonstrations with our FRC robot, driving it around the hall and showing off its features used last year in "Rack and Roll".

A highlight of the entire expo was a showing by John Blich, and the robots produced by his company, Blitz Solutions. These robots were used for search and rescue and other purposes such as underwater exploration, and flight. Several of the robots were used in search and rescue operations and the development of these activities. He had over 20 robots of varied sizes and allowed the attendees to drive them throughout the meeting hall as well as outside. Many of these were remote control, where an on-board mounted camera allowed the robot to be driven while out of sight. Mr. Blich, and his company Blitz Solutions, one of the main sponsors of Team Blitz showed the attendees real life applications of robots and their value and technology. It was an exhibition enjoyed by all.

The Expo generated extensive interest in a Robotics Camp that Team Blitz is planning on hosting this summer where team members will teach about robotics using the VEX and FLL robots.



Stepping into Composites Bryan Adrian



This year Team Blitz took a major leap of faith. We made part of our robot out of composite material. Really none of the students knew anything about how to apply these composites onto a foam base shape. We used Kevlar, the stuff the military uses in bulletproof jackets. A saying the team likes to hear is, " We have a bullet proof robot." Now the team only used the Kevlar for the arm mechanism. Our rationale was Kevlar would be strong and durable at the same time.

Kevlar comes in a roll like any other fabric. The cool part begins when you have to apply the resin, which stiffens the fabric. First cut out the basic shape needed from the design. Then cut the Kevlar, using special order aircraft shears, into strips and lay those strips onto the foam shape. Next comes the resin. Brush the resin into the fabric saturating the fabric completely. We used a special method to help the resin cure. We wrapped the wet, sticky fabric with a non-stick plastic wrap. This way we could continue working on the rest of the shape without having to worry about the fabric falling off on account of gravity. After all the initial strips dried, we took a really long 4 in wide strip of Kevlar tape and wrapped over the previous strips already on the foam shape. The foam was really just a guide shape for the Kevlar strips. All the strength comes from the surface area of the Kevlar and resin.

After the arm was complete, we put it on the robot and started to drive around and pick up the track ball. This year I am driving the arm mechanism part of the robot. First, to assist in the track ball acquisition, we decided to add an IR sensor (Infrared sensor). This sensor tells the robot how close or far away the ball is from the inside of the gripper. When I pull the trigger the robot gets a command to close the gripper when the ball is a certain distance away. This way the human factor is reduced limiting possible human error. Also there are several preset arm positions. I push a button and the arm goes to a preprogrammed location with the help of Optical Shaft Encoders (OSE for short). I control the rotating motion of the robot with a side-to-side movement of the joystick and push buttons (the rotating was dubbed the "virtual turn table").



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TEAM BLITZ is a high school robotics team of students from the Conifer, Baily, and Evergreen areas. We are affiliated with FIRST (For Inspiration and Recognition of Science and Technology), a non-profit organization founded in 1989 by inventor and entrepreneur Dean Kamen "to create a world where science and technology are celebrated". Team Blitz was organized by a group of local parents and technical mentors and is under a 501c3 sponsor and is one of 1300 teams from around the world. This team of youth, ages 13-18, will compete in the FIRST Robotic Challenge.

Our Mission

To establish a permanent robotics organization in the 285 Corridor Communities, Conifer, Aspen Park and Evergreen, whose purpose is to help our young people discover the fun and excitement of science, technology and engineering through challenges introduced to them by the FIRST robotics competition.

2008 Corporate Sponsors

Thanks also to our individual sponsors!



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