

September 2006

MAINE'S SOURCE FOR ENGINEERING AND PROGRAMMING EVENTS

UPCOMING EVENTS

September 9th, 2006

Using Robotics in the classroom, Oakland

October 2nd, 2006

High school NXT training, Searsport

December 2nd, 2006

Northern Maine FIRST LEGO League Tournament in Castine

December 9th, 2006

Tentative day for Southern Maine FIRST LEGO League Tournament

October 2006-February 2007

FIRST High School VEX Program with Competition tentatively scheduled for February 2007

Maine's 2006 LEGO® Track Meet Results

We had two very successful Maine Robot Track Meets this year; one in Gorham at the University of Southern Maine, and the other at the Maine Maritime Academy in Castine.

Ten teams came to the USM Track Meet to compete and nine teams made it to MMA in Castine. All told we had 118 students at the two meets, a great turnout for only our second year, and our first year in Southern Maine.

Check out the website if you want more information about this spring event!

USM-Gorham, April 29th, 2006

TOURNAMENT CHAMPIONS

1ST PLACE - New England Robotics Designers
 2ND PLACE - Jay Robot Monkeys
 3RD PLACE - The Bad News Bears, Pownal

Slope Climber:

1st Place - The NERDS (Windham, NH) with 77-1/2 degrees

Ping Pong Shot Put:

1st Place - The NERDS with 16 balls delivered in 30 seconds

2nd Place - Fort Fairfield Tigers with 13 balls delivered

Table Navigating Robot:

1st Place - The NERDS with a time of 3.91 seconds

2nd Place - Cape Elizabeth A team with a time of 5.28 seconds

Strongest Robot (4 and under motors):

1st Place - The NERDS, pulled 50 pounds 2 feet in 3.75 seconds

2nd Place - Dude Where's My Car (Pownal) pulled 50 lbs in 7.05 seconds

Strongest Robot (over 4 motors):

1st Place - The Bad News Bears (Pownal), pulled 50 pounds in 6.03 seconds

Line Following Robot:

1st Place - The NERDS, 9.38 seconds

2nd Place - Cape Elizabeth B, 32.91 seconds

Bridge Competition:

1st Place - The NERDS, 60 pounds, 1576 gram bridge

2nd Place - Jay Middle School, 60 pounds, 1600 gram bridge

3rd Place - Dude Where's My Car, 60 pounds, 2352 gram bridge

Fastest Robot (15 feet), times are converted from counter, and are approximate (but relative):

1st Place - The NERDS, 1.8 sec.

2nd Place - Jay Middle School, 2.2 sec.

3rd Place - Blue Legoons, Bristol, 2.6 sec.

**Maine Maritime Academy, Castine
 May 6th, 2006**

TOURNAMENT CHAMPIONS:

1ST PLACE - Trenton Warriors

2ND PLACE - Torque Dorks (Surry)

3RD PLACE - Belfast Creatures

Slope Climber:

1st Place - Trenton Warriors (75 deg)

2nd Place - Belfast Creatures (72.5 deg)

Ping Pong Shot Put:

1st Place - Torque Dorks (6 in 30 sec)

Table Navigating Robot:

1st Place - Mouseanators, Brewer ((3.09 sec)

2nd Place - Trenton Warriors (3.44 sec)

Strongest Robot (4 and under motors)

1st Place - Trenton Warriors (10 sec)

2nd Place - Charlotte Robotics (11 sec)

Strongest Robot (over 4 motors)

1st Place - Torque Dorks (14 sec)

Line Following Robot:

1st Place - Trenton Warriors (14 sec)

Bridge Competition:

1st Place - Belfast Creatures, 60 pounds, 1410 gram bridge

2nd Place - Torque Dorks, 60 pounds, 2608 gram bridge

Fastest Robot (15 feet):

1st Place - Belfast Creatures (1.85 sec)

2nd Place - RoboGalaxy1 (2.27 sec)

Our Vacation and Summer Camps Programs



Each year since 2002 Maine Robotics Director Tom Bickford has been working with children as part of a summer camp program. In 2006 there were a total of 112 camper weeks, with each week being a 5 day, 6½ hour program.

Camps were operated in Orono, Bangor, and Readfield.

This program gives children the opportunity to work with adults who specialize in engineering, computer sciences and are also educators skilled at mentoring the inquisitiveness of the youth.

Visit

www.mainerobotics.org/camps.html for more information

The FIRST™ LEGO® League Tournament

The 2006 FLL Challenge has been established (although all the details won't be out for a few more weeks)! This year it is NANOQUEST, all things REALLY small.



The Winners of Maine's 2005 Ocean Odyssey Competition in Maine were the team from the Troy Howard Middle School in Belfast. The team went on to compete in Atlanta Georgia (at the Georgia Dome) last April and placed 4th for their Research and Presentation!! That's out of over 7000 teams from around the world.



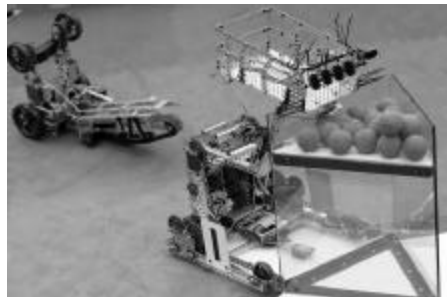
Registration for 2006 is currently underway at the international page www.firstlegoleague.org or check out our website: www.mainerobotics.org/nanoquest.html, you must be registered nationally to participate at the tournaments.

Each fall teams with children from 9 to 14 build, test, and program robots to perform a series of thematic missions on the year's playing field. The teams also research a related topic, prepare, and then present their hypothesis, findings, and recommendations for using robotics to improve a condition they have identified.

The FIRST VEX Challenge

This year we will be holding a **High School VEX Challenge** in cooperation with the FIRST group, the same group that puts on the FIRST LEGO League and the High School FIRST Robotics Competition. The VEX program is a more affordable offering than the FRC and has become popular with students in areas where it has been introduced.

We are working on our schedule for the year, but registration is now online at www.usfirst.org/vex/ as are answers to your questions about the program.



The VEX Challenge uses the popular VEX robotics kit (formerly of Radio Shack®) and has much of the adaptability of the LEGO kits but with a hint of erector set thrown in.

Also check back to our Maine Robotics website for more information over the next few weeks.

The NXT LEGO Mindstorms

The NXT MindStorms kit is now out and shipping. We have had the opportunity to use one this summer as well as let some kids at the camps use it as well. We have a few notes for those of you out there in robot land:

1. The motors with built in rotation sensors are really nice and they are much more accurate than using a rotational sensor with a motor because the sensor is at the high speed end of the internal gears, so you can measure in small increments like 1 or 2 degrees! The down side is that the motors can only be attached to by use of pin connectors and there are a limited number of these connection spots.
2. The NXT brick is easy to use, and the USB cable makes downloads easy enough. We have noticed that the one we got (from a local retail store) has

very little memory in it and can only hold a small number of programs. I haven't called support on this, but it certainly has raised our eyebrows after hearing earlier that memory wouldn't be an issue.

You can connect 3 motor/sensor sets and 4 sensors to the NXT. I was so excited when I heard they were going to use a phone connector to make the connection. Finally, we could make our own cables. WRONG! I was ready to give LEGO the thumbs up on this one, but they have decided to use a proprietary telephone connector so you can't make your own cables. Sorry, but shame on LEGO. Of course for \$10 you can get three cables from the manufacturer.



Other nice things about the new kit is that the motor (with built in sensor) is only \$17.99 (49 cents more than the RCX motor), this saves you about \$18 by not buying the rotational sensor for the older version.

The ultrasonic sensor works very nicely by the way, tell the NXT to stop 10 cm from the wall and it will do just that.

The new LEGO NXT MindStorms software is similar to the Robotic Invention System in that each element that you add to the programming environment is partnered with all the necessary parameters, with radio buttons and sliders to set speed levels, port assignments, and time delays, etc. The down side is that the new program will only run on Windows XP platforms and Mac OSX 10.3.9 or 10.4 and you really need at least 256 MB of RAM on your computer.

I haven't had a chance to run it on a Mac yet, but I'm suspecting you'll want a newer one of those as well. When loaded in XP the NXT MindStorms took over 200 MB of RAM out of circulation, that's a lot!

If you are going to buy these for your school, the www.legoeducationstore.com kits come with rechargeable batteries and about 400 pieces for \$250 (plus shipping) and you need to buy the software separate (\$42/single copy). At www.mindstorms.com the kit is \$249 and comes with 577 pieces, the software, but uses 6 AA batteries. You decide.

Newsletter

Maine Robotics periodically sends out our newsletter to over 900 schools and people in the State of Maine interested in these programs. Our newsletter is also available on-line, but we believe it is important to provide hard copy for teachers to easily share with their classes.

Call for Articles

Maine Robotics would like to offer this space for coaches, teachers, and professionals who would like to submit articles about how they use robotics in their community, school or business.

Submissions should be 700 words or less and if they include pictures or diagrams they must be original work and belong to you.

Sorry but no pictures of children are allowed. However, pictures and drawings of robots, programs, structures, tools, etc. are greatly encouraged. Submissions may be through e-mail or post. Visit our website for guidelines for submission www.mainerobotics.org/articles.html

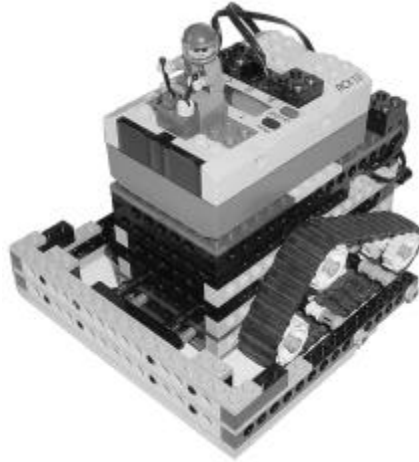
Partnering With Others

Maine Maritime Academy in Castine will be host to the 2006 Northern FIRST LEGO League Tournament and to the Spring Robot Track Meet.

University of Southern Maine, School for Applied Science, Engineering and

Technology will be host to the 2006 Southern FLL Tournament.

We are also available to work with your school or organization as mentors. Call us if you have questions.



About Maine Robotics:

Maine Robotics believes that only by working with Maine's youth from an early age and continuing through their entire educational experience can we expect our youth to successfully grow into the fields of science, engineering, computers, and technology.

Our youth want the experiences, they are ready for the tasks and lives that lay ahead of them, but we as a state and a people must help them realize this potential for their sakes as well as the sake of our state's well being.

Maine Robotics' Director, Tom Bickford, is an educator and an engineer with decades of experience in both the education and science fields. Tom holds degrees in both biology and biomedical engineering and has a background working on state-of-the-art telemedicine systems while at UNC and the UTHSC in San Antonio. Tom has taught at the middle school, high school, and college levels.

Maine Robotics is a Maine non-profit corporation. Board Members include Thomas Bickford (President), Sally Coppus, and former state representative Tom Sawyer.

Tom Bickford, Director
bickford@mainerobotics.org

Learning Modules available from Maine Robotics

For the past several years we've been working on having easy to use (for the kids AND the adults) learning modules. These are double-side, single page, laminated, self-taught modules that teach and demonstrate the basics of building robots and programming them.

Each module covers a topic that we know from experience is important to building good robots. Most include the programming tips or example programs for use with the projects listed.

Our first bundle of 10 is now available for sale and can be found on our website. The 10 topics are:

1. Building a Robot
2. Building a Pivot Wheel
3. Using Gears, Part I
4. Using Gears, Part II
5. RoboLab Basics
6. Turning your robot
7. Using a Touch Sensor
8. Using a Light Sensor
9. Line Following
10. Using a Rotational Sensor



They will be available as a pack of ten (one each). With each purchase we include free, the teachers guide for that unit(s) to help even a novice engineer start working with the children and the robots.

DONATE LEGOS FOR THE CAUSE!

Maine Robotics will be accepting donations of used or new LEGOs to help fund the programs we operate. If they are parts we can use they will be added to our inventory, otherwise they will be bundled and sold to raise money for the Maine Robotics' programs.

Just send to Maine Robotics or bring to one of our events for drop-off.

Dear Teacher, Coach, Technology Coordinator, Principal or Parent,

The programs offered by Maine Robotics are designed to foster interest and skills in computer science, engineering, physics, and technology in general. You and your students can gain so much by joining in! Please share this information with others at your school.

Our goal is to excite and teach the students, campers, and participants and keep them coming back for more; more from the programs, more from school, and more from life.

The Crane uses 2 motors to rotate the crane arm (under crane platform) and one motor to run the winch (right end of crane arm as shown). The controller (lower middle) uses two rotation sensors to operate the system. The horizontal wheel is connected to one sensor and controls the crane arm swing motors (rotate clockwise or counterclockwise). The vertical wheel is attached to a second sensor and raises and lowers the winch cable (lift/lower). There is also a touch sensor to reset the rotational sensors to their zero position should they get off (and therefore not stop).

(Send us a picture and description and maybe we can include your robot in a future newsletter!)

