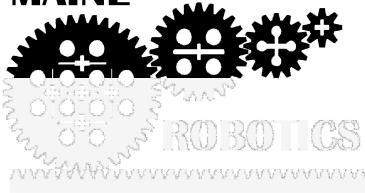


MAINE



September 2007

MAINE'S SOURCE FOR ENGINEERING AND PROGRAMMING EVENTS

UPCOMING EVENTS

September 14-20th, 2007

Workshops: Using Robotics in the classroom

Gorham, Rockland, Belfast, Augusta, and Machias (see website for times and agenda)

December 1-2nd, 2007 (tentative)

Southern Maine FIRST LEGO

December 9th, 2007

Northern Maine FIRST LEGO League Tournament
Maine Maritime Academy
Castine

Maine Robotics to launch annual giving program this fall

In the fall of 2007 Maine Robotics will launch an annual giving program. The annual fund will seek voluntary contributions from anyone interested in supporting our mission - parents of Maine Robotics participants, educators, businesses, and civic organizations.

The annual fund will generate vital financial resources to support Maine Robotics student programs - FIRST™ LEGO® League. Robot Track Meet, FIRST™ Tech Tournament, Washington County Robot EXPO and summer camps in Bangor, Orono, Gorham, Portland and Readfield.

Annual gifts to Maine Robotics will also fund additional training workshops for teachers, coaches and parents, as well as much-needed new equipment for student programs - laptop computers, NXT, RCX and VEX robot kits. Additional financial resources will allow us to consider expanding summer programs to Lewiston, Castine, and Washington County, and increasing the number of weeks we can offer programs in Portland, Bangor and Readfield.

During 2007 Maine Robotics also launched an aggressive plan to seek foundation grants. Foundations look

closely for broad-based constituent support when reviewing grant applications. Establishing an annual giving program will also help to secure future foundation grants, which are very important to the continued success and growth of Mains Robotics.

Annual gifts will play an important part in ensuring the future of Maine Robotics by supporting our mission and providing important financial resources necessary for growth. Maine Robotics is a nonprofit 501(c)(3) educational organization. All contributions to Maine Robotics are tax-deductible to the extent allowed by law.

The FIRST™ LEGO® League Tournament



The 2007 FLL Challenge has been established (although all the details won't be out until September 5! This year it is

Power Puzzle and will focus on alternative forms of energy and conservation of energy.



A FIRST LEGO League Tournament

The Winners of Maine's 2007 NanoQuest 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 with the 100 best teams from around the world!

REMEMBER TO REGISTER!

Registration for 2007 is currently underway at the international page www.firstlegoleague.org or check our page

www.mainerobotics.org/powerpuzzle.html, you must be registered nationally to participate at the tournaments.

Each fall teams with children from 9 to 14 years old, 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.

September Robot Workshops

Thanks to a grant from the Maine Community Foundation, Maine Robotics will be offering 5 teacher/coach workshops in September.

Each workshop will cover the basics of building and programming the robots and also how to use them in class and after school programs. Because of the FLL season, the FLL will be emphasized and how that program works.

See our website www.mainerobotics.org/workshops for more information.

Our Vacation and Summer Camps Programs

Every year since 2002 Maine Robotics Director Tom Bickford has been working with children as part of a summer camp program. In 2007 there were 177 campers attending 11 different weeks of camp.



A summer camp in Orono

Camps were operated in Orono, Bangor, Gorham, Portland and Readfield. We expect to expand the offerings again next year and hope to include camps in Lewiston, Castine, and Machias.

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.

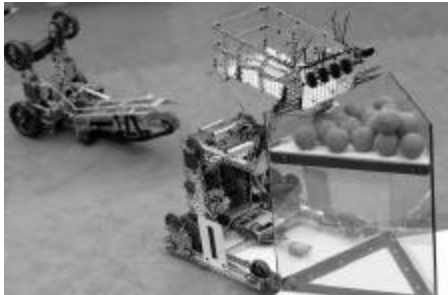
Visit www.mainerobotics.org/camps.html for more information

The FIRST Tech Challenge

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

The name has changed but the program is the same for at least this year. Our guess is that FIRST may be uncoupling from the VEX product for future years, or perhaps making it possible to open up to more robot types in the future.

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



VEX robots competing

The Tech Challenge uses the popular VEX robotics kit 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



We've had a chance to work with the new NXT for a while. It was first released last August. Some things are good; others while not bad certainly take some getting used to. The good news is that the new NXT is easier to program than using RoboLab (under inventor). It is reminiscent of either RoboLab Pilot or the Robotic Invention

System; it is very hard to make programming errors and broken lines in the program are all but impossible. And while this makes programming easier, we've seen less "active thinking" about programming from some of the children.

As for the NXT hardware?

Well, you can store more programs and name the programs with names that make sense. Communications back to the computer is easy to do with either the included USB cable, or by using Bluetooth technology. We haven't setup a room full of NXTs using Bluetooth, but since each one would have a different name and is password enabled, and then communications between one computer and one NXT is possible. For those of us familiar with a room of RCXs and the IR towers we understand how this impacts accidental downloads.



All the kits we have use the rechargeable power supply (fits in the 6-AA battery compartment) and are easy to plug in without disassembling the robot; the battery pack is a big advantage.

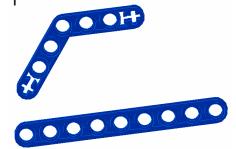
On the plus side are the sensors. Each motor has a built in rotational sensor which makes going straight a breeze, you just tell it to go straight. There are also 4 additional sensor slots for any of the other sensors. The basic educational NXT kit comes with 2 touch sensors, a light sensor, a sound sensor, and an ultrasonic sensor. So the kit comes with 5 different external sensors and 3 built in rotational sensors (in the motors). You can also use old sensors and motors by utilizing the adapter wires that come with the kit, or are available from LEGO for just that purpose. All in all you can attach up to 7 sensors at once, as long as three of them are the built in rotational sensors. The bad news is you can't gang the touch sensors anymore. Other sensors available include an Acceleration sensor, a color sensor, a compass sensor, and a Vernier sensor adaptor (maker of commercial sensors: www.vernier.com/probes/index.html for a list of sensor probes).



A three motor robot arm using the NXT

The wires that come with the NXT should prove to be much more durable than the older LEGO Mindstorms kit wires. The good news is they cost about the same as the older LEGO connectors, they are phone-style plugs and easy to use. The bad news is they can't be connected to make longer wires without using special extender adapters. I will also ding LEGO for using proprietary plugs. As someone who really looked forward to making my own NXT wires using standard 6 conductor phone wire and plugs; I was disappointed to find that while the plugs and jacks are standard size (6 wire), the locking tab on the top has been moved over to the side making it virtually impossible to make your own or use standard crimping tools. I haven't been able to find the plugs or crimpers that would work on this.

I think perhaps the one thing you will find with the NXT kit that worries me the most but perhaps will work out okay with time is that the way the system works seems to remove some of the intrinsically easy to build nature that came with the RCX kits. Mostly we've seen kids building straight out of the plans that LEGO ships with the kits, whereas with the RCX even those that started with a simply plan found it easy to modify the robots to their hearts content. At camp this summer we've seen robots change very little over the course of a week and I think part of that is that the NXT is harder to build around. It uses almost no standard bricks, plates, or beams, but relies on Technic liftarms as the primary structure.



Featured Website

If you haven't already been there, check out www.bricklink.com. This website offers a website to buy and sell LEGOs by the piece or the kit.

There are over 70,000,000 pieces of LEGO for sale at any one time.

Maine's 2007 Robot 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.

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

Castine:

Overall:

- 1st- **Brewer Witches (4 firsts, 1 second)**
- 2nd- Trenton NotNerts (2 firsts, 2 seconds, 1 third)
- 3rd- Jonesboro Robotics (2 firsts)

Maze Navigator (NXT):

- Brewer Witches (Eric & David) with a time of 24.18 seconds.

Line Follower (RCX):

- 1st- Jonesboro Robotics (Taylor) with a time of 19.03 seconds.
- 2nd- Charlotte Rockin' Robots (Quinn) with a time of 19.44 seconds.
- 3rd- Trenton NotNerts (Justin) with a time of 19.81 seconds.

Fastest Robot (RCX):

- 1st- Brewer Witches (Gehrig & Greg) with a time of 2.31 seconds
- 2nd- Brewer Witches (Ryan) with a time of 2.80 seconds
- 3rd- Penobscot Tigers with a time of 2.89 seconds

Fastest Robot (NXT):

- 1st- Anonymous Autonomous with a time of 2.05 seconds
- 2nd- Trenton NotNerts with a time of 3.20 seconds

Slope Climber:

- 1st- Brewer Witches (Sam & Steven) with a climb of 75 degrees in 7.5 seconds
- 2nd- Trenton NotNerts with a 70 degree climb in 6.37 seconds
- 3rd- Penobscot Tigers with a climb of 50 degrees in 7.96 seconds

Table Navigator:

- 1st- Brewer Witches with a 7.50 second run

Strongest (4 and under motors):

- 1st- Trenton NotNerts with a 50 pound pull in 8.06 seconds
- 2nd- Charlotte Rockin' Robots with a 50 pound pull in 8.65 seconds

Strongest (over 4 motors):

- 1st- Jonesboro Robotics with a 20 pound pull in 5 seconds

Ping Pong Shot Put:

- 1st- Trenton NotNerts with 6 balls in within 30 seconds

Gorham:

Overall:

- 1st- **Robotic Rebels from Westbrook (2 firsts, 2 seconds, and a third place!)**

Maze Navigator (NXT):

- 1st- RoboTigers from Jay (Ian)

Line Follower (RCX):

None entered

Fastest (RCX):

- 1st- RoboTigers from Jay (Colin & Cassidy) with a 2.85 second run

Fastest (NXT):

- 1st- Department of LEGOs from Bowdoinham (Devin) with a 2.95 second run

Strongest:

- 1st- Robotic Rebels from Westbrook

Slope Climber:

- 1st- Fort Fairfield Tigers (Dustin & Tim)

Ping Pong Shot Put:

- 1st- Fort Fairfield Tigers (Josh) with 18 ping pong balls in 30 seconds!

Bridge:

- 1st- RoboTigers from Jay (Jacob & Noah) their bridge which spanned 100 knobs (not the required 80) held up 55 pounds, before collapsing on the 60 pound attempt!

Table Navigator:

- 1st- Robotic Rebels from Westbrook (Vaughn)

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.

Visit our website for guidelines for submission

www.mainerobotics.org/articles.html



A Pinball Machine made all of LEGOs

Partnering With Others

Maine Maritime Academy in Castine will be host to the 2007 Northern FIRST LEGO League Tournament and to the Spring Robot Track Meet.

University of Southern Maine, School for Applied Science, Engineering and Technology is hoping to host the Southern Maine FLL and did host us for 4 weeks of summer camp this year.

The **Advanced Manufacturing Center** on the UMaine campus in Orono was nice enough to house us for 3 weeks of camp and helped fund some new equipment for the camps.

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

About Maine Robotics:

Our Mission: The Mission of Maine Robotics is to promote growth and interest in the sciences of engineering and computers to youth ages 8 to 18.

To provide opportunities to instruct teachers, coaches, and mentors in the skills necessary to in turn mentor and teach the youth of Maine.

Maine Robotics seeks to provide a supportive, mentoring atmosphere for teachers wishing to pursue advancement in the sometimes daunting world of engineering and computer science. Maine Robotics also seeks to provide a supportive system for children and youth to learn more about engineering and computer science in an energetic, educational manner.

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 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

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.

This Rubik Cube solver

If you ever saw JP Brown's RCX based robot that could solve the Rubiks cube in 10 minutes, then you'll love the new NXT based robot that can solve the puzzle in under a minute and a half!

It uses just 3 motors and a USB camera to do the work. If you go to YouTube and search for "NXT" and "Rubik" you'll be able to see the robots in action.

(Send us a picture and description and we'll try and include your robot in a future newsletter!)

