The Daily Spread

Volume 1, Issue 1 May 2012

SOUTH LYON ROBOTICS CLUB

A Visit From University Of Michigan APRIL Robotics Lab

It is fitting that we kickoff our first edition of the Flying Toasters newsletter, the Daily Spread, with the visit of the APRIL Robotics Laboratory from the University of Michigan. Being part of the Computer Science and Engineering department, the APRIL Robotics Laboratory investigates Autonomy, Perception, Robotics, Interfaces, and Learning. Led by assistant professor Edwin Olson, the APRIL laboratory won the Multi Autonomous Ground Robot International Challenge (MAGIC) Robotics competition in Brisbane, Australia, besting 22 other teams from around the world. To do this, they developed a team of robots that can explore an urban environment (indoors and outdoors), identify and track people, and identify objects of interests. These robots are built with advanced sensor hardware and perception software that allows them to operate without human assistance.

The APRIL Team has been using a new visual fiducial system that uses a 2D bar code style “tag", allowing full 6 DOF localization of features from a single image. Using this system improves other systems such that the robots have a faster and more robust line detection system, a stronger digital coding system, and greater robustness to occlusion, warping, and lens distortion.

On May 10th, the APRIL Team visited Coach Weber’s sixth hour Robotics Course and then put on a demonstration and Q&A for the robotics club and other visitors.

For more information, go to: http://april.eecs.umich.edu/

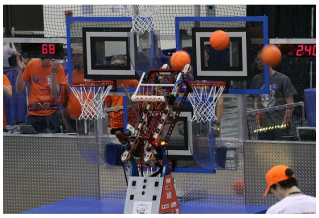
A Toast To An Outstanding Partnership — Jim Burkowski, Cybernet

Out of all of the projects we have completed here at Cybernet, working with The Flying Toasters has been one of the most rewarding. Watching high school students grow and mature while creating a robust and creative machine has been awesome!

Because Cybernet’s employees are shareholders, we had to ask for donations from employees in order to give The Flying Toasters a lump sum that they could use. The outcome was awesome, raising a total of $1,000 for 2012 and becoming The Flying Toaster’s premier sponsor. The Flying Toasters have been very friendly, and they have plans to get Cybernet’s employees more involved in FIRST robotics, I personally am very excited for 2013!

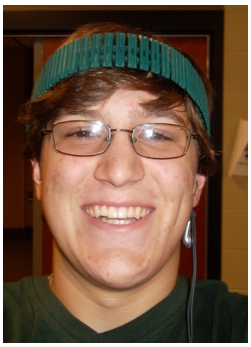
Inside this Issue:

CEO's Note — Lucas Stodor

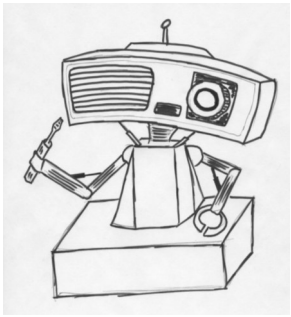


Being CEO of this team is not an easy task. As CEO, it is my job to keep the club on track for the near and far future. I plan events such as our awards banquet, non-FIRST competitions, events with other teams, and the general direction that we believe the team should move towards. And although I do manage the team, I am not the final say in all decisions. Most decisions, although looked at from a financial and realistic view, are mostly decided by a group vote. Any decision made is no good if your team is not behind it, so it is important to get their input before a decision is made. Also, it is important to keep things cool and real. As awesome as it would be to build a robot that could take us to the moon, that is neither in our budget nor in our skill set. But the skills that are learned in this club may one day help to make that possible, if not for our team, for a company or government.

So to recap, it's my job to make sure the Flying Toasters are heading in the right direction. Right now, all I can say is that ceteris paribus, the Flying Toasters are headed into a busy, but very bright future.



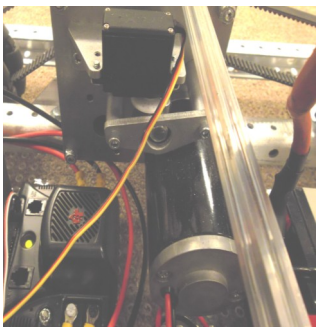
Public Relations/Spirit Blurb



There are 10 kinds of people in the world. Those who can read binary and those who can't.

Things are moving rapidly in the "non-technical" aspect of the South Lyon Robotics Club. Since the competition season has ended, we have had more time to focus on other aspects of the club. We are vigilantly looking into a new accounting program to help us keep better track of our funds. We are looking into new and different types of fundraisers as a means of quick cash for certain events. We've discussed ideas for summer training programs where we would teach new students or even people in the general community about how to do certain tasks. Although one of our prominent new programs is our idea of "Robotics Anonymous." This program, originally brought up as a joke, has actually turned into a very passionate subject. The program's main goal is to connect graduating seniors with other robotics teams in the area of their college to help spread our good fortune to those in need.

Mechanical Quid-Bit — Jacob Pigeon

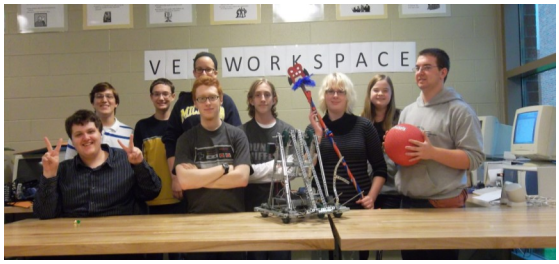


Everyone has seen the robots on the field, moving game pieces, and operating parts of the robot. How exactly do we get this movement though? Simplest answer: electromagnetic motors. These electric motors produce movement from spinning an electromagnet. They range in all shapes, sizes, and uses; from the small VEX servos, to the workhorse CIM motor. Commonly used in the drive train, they can also be found raising and lowering a heavy arm, launching balls, and more. The CIM motor used in FIRST is particularly powerful. With only two of them, with the proper gear ratio, they can move the 120 pound robots around the field at speeds of up to 10 ft/s. That's a powerful motor!

C.O.I.L. — Mike Bastien

COIL stands for "*Covert Operations, Intelligence, and Legal.*" This group specializes in team espionage and rule interpretation. It is a necessity for incoming members to know and understand all rules and regulations regarding the challenge, and should be willing to communicate with other teams about their machines and strategies. The team which COIL represents, Team 3641

The Flying Toasters, increased its standings upon incorporating scouting into its routine. Our team also found great success by scouting its own actions to pinpoint fundamental problems in our operation. Using the information from this feedback, our exhausted drive team was able to make an incredible comeback at our second tournament. We plan to create standard operating procedures on how to scout efficiently and effectively in order to pass down our knowledge so that it does not die when the seniors graduate.



Boosters Info — Doug Pierce

The Parent Boosters were formed at the end of our rookie FIRST season in April of 2011.

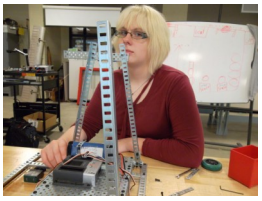
The mission of the Parent Boosters is to provide support for the team during the build season and competitions. We do everything from providing transportation to organizing team fundraising events. We also provide dinners during the late evening meetings.

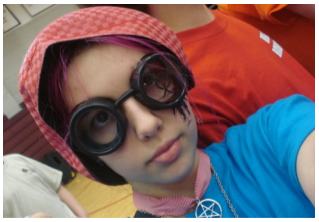
Another critical function that the Parent Boosters performs, is to be the short term bank for the team. The Boosters account is used to make purchases during the build season when time is of the essence!

The Boosters are going to have a busy summer of fundraising--bottle and can drives, collecting scrap metals and computers, and seeking small donations. If you would like donate your recyclable metals, returnable cans and bottles, or donate directly to the Boosters, contact me at rildon@aol.com.

Community News — Kerry Pierce

One of the unique features of the robotics program is its integration with the community. Teams frequently hold fundraisers for separate charities and causes, and Team 3641 is currently helping to raise money and awareness for the organization **Operation Injured Soldiers**. This charity is based in South Lyon, and helps pay for the life expenses of injured war veterans. In order to help this worthy cause, our team began raising money at our district competitions through informational posters and collection buckets. We are also about to start a school-wide fundraising effort from May 7th to May 11th at South Lyon East during each lunch hour. For more information, please visit the charity's website at **http://www.injuredsoldiers.org/**

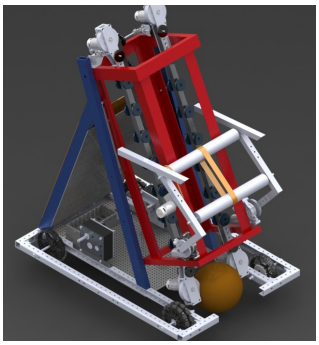




A Personal Account -

For the majority of teams, competitions are a mere proof that they have been given a chance to prove themselves worthy. To me, however, competitions show how there are people of all backgrounds from all over the state that are willing to open up their arms and embrace all others, no matter how different they are. These competitions are a reminder to me that I may be different but not at all alone. I remember my first time being a human player n a competition. Instead of being treated like a kid like my teachers and upperclassmen would, I was respected as an intelligent human, despite my age and lack of experience. I was escorted into the hallways where I was spoken to as an adult with the rest of the human players. It was then that I learned that these strange places, these competitions, would be a place where my humanity is recognized no matter my age or height or background or gender or anything that sets me apart. At competitions, I am a human, not a number at a school. And that is what competitions mean to me.

A Download From Coach Weber



Welcome. This past year has been such a successful year! What an achievement for the Flying Toasters to place 67th out of 194 teams in Michigan, rising from 118th place last year (our rookie year). Our sponsors have been so giving and came through when we needed them the most. Funded mainly by sponsorship, our team put together quite a showing winning many awards including the Imagery Award (Northville Competition) and the Engineering Excellence Award (Livonia Competition). The Flying Toasters is well on becoming a dynasty team!

Building on our successful season, the team will be competing in post season competitions/exhibitions: MARC @ Monroe HS, June 22-23; Maker Faire @ The Henry Ford, July 28-29; and Kettering, September 21-22. Even though these are not a part of the FIRST season, they are in valuable as the team "hones" in their skills and tries out new concepts without the stress of the season.

Celebrating our successes, we will be having a banquette May 30th, where the first ever robotics varsity letter will be passed out. Family, friends, sponsors, and all are invited to the auspicious occasion.

Drive Team — Lucas Burkowski

Probably one of the most desired positions on our robotics team is the drive team. It is the drive team's job to setup the robot on the field for autonomous operation and then to operate the robot in a fashion where the robot can score efficiently. The thing that makes this position so desirable is the robot is basically driven like a videogame or R/C car; in fact that is what the robot essentially is. Many students are very enthusiastic about getting a chance to be a driver, but that enthusiasm soon dies because of the difficulty of operation. It has taken some real natural talent in order to get the robot, yet we are looking to change that by doing two things… First we are installing sensors on our robot to increase the ease of operation; second we will train new drivers over summer. These two solutions should help us develop more effective drivers, enhancing our team's performance on the field.

A Note From the Treasury

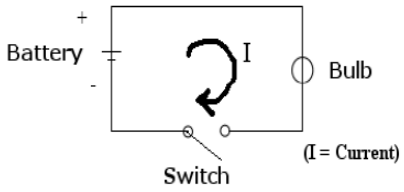
We started off our FIRST season with a grant from the state of Michigan which paid the entry fee into FIRST, but next year we will not get the same luxury. We are currently building our treasury to enable us to compete on the highest levels. Competing in Robotics is an expensive learning experience. A single event can cost as much as $5,000, just to enter! That does not include the cost of building the robot! We are raising our funds for the 2012-2013 FIRST season and unfortunately, we are a long ways off. So in the face of this, we turn to our gracious partners for their continued help. If you are not already a partner or would like to become a partner, please contact coach Ron Weber at weberr@slcs.us

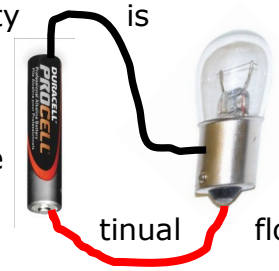
SCIENCE, TECHNOLOGY, ENGINEERING, MATH

Series vs. Parallel

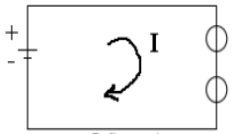
A simple circuit consists of three elements: a source of electricity (battery), a path or conductor on which electricity flows (wire) and an electrical resistor (lamp) which is any device that requires electricity to operate. The illustration below shows a simple circuit containing a battery, two wires, and a low voltage light bulb. The flow of electricity is caused by excess electrons on the negative end of the battery flowing toward the positive end, or terminal, of the battery. When the circuit is complete, electrons flow from the negative terminal through the wire conductor, then through the bulb (lighting it up), and finally back to the positive terminal - in a continual flow.

Schematic Diagram of a Simple Circuit



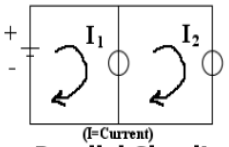


In a series circuit, electricity has only one path on which to travel. In the example to the right, two bulbs are powered by a battery in a series circuit design. Electricity flows from the battery to each bulb, one at a time, in the order they are wired to the circuit. In this case, because the electricity can only flow in one path, if one of the bulbs blew out, the other bulb would not be able to light up because the flow of electric current would have been interrupted. In the same way, if one bulb was unscrewed, the current flow to both bulbs would be interrupted.



Series Circuit

In a parallel circuit, electricity has more than one path on which to travel. In the example to the right, two bulbs are powered by a battery in a parallel circuit design. In this case, because the electricity can flow in more than one path, if one of the bulbs blew out, the other bulb would still be able to light up because the flow of electricity to the broken bulb would not stop the flow of electricity to the good bulb. In the same way, if one bulb were unscrewed, it would not prevent the other bulb from lighting up.



Parallel Circuit

The flow of electricity depends on how much resistance is in the circuit. In our examples, the bulbs provide resistance. In a series circuit, the resistance in the circuit equals the total resistance of all the bulbs. The more bulbs in the circuit, the dimmer they will light. In a parallel circuit, there are multiple paths through which current can flow, so the resistance of the overall circuit is lower than it would be if only one path was available. The lower resistance means that the current will be higher and the bulbs will burn brighter compared to the same number of bulbs arranged in a series circuit.

In our next issue, we will put these concepts to use. You will need: 6 pieces of bell wire (6" each) with ends stripped, three or more 1.5 volt bulbs, socket for the bulbs, size D batteries, and D size Battery holder.

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THE FLYING TOASTERS

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South Lyon Fence Co. 53583 Grand River Ave., New Hudson, MI 48165 Phone Number: (248)437-4445	**RIW Hobbies** 29116 5 Mile Rd., Livonia, MI 48154 734-261-7233
South Lyon Orthodontics 22900 Pontiac Trail, South Lyon, MI 48178 Phone: (248)-437-1620	**Parts Plus** 381 Reese St., South Lyon, MI 48178 248-486-9404
Miners Barber Shop 56875 Grand River Ave., New Hudson, MI 48165 Phone Number: (248) 486-3270	**Joel's on Joy—Transmission rebuilding** 20901 Joy Rd., Detroit, MI 48228 248-446-6024
Cybernet Systems Corporation 3885 Research Park Drive, Ann Arbor, MI 48108-2217	

"We shall inspire and intrigue, unite, and achieve greatness!"

MAY 2012

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3 Meeting	4	5
6	7 Meeting	8	9	10 U of M Meeting	11	12
13	14 Meeting	15	16	17 Meeting	18 SLEHS Prom	19
20	21 Meeting	22	23	24 Meeting	25	26
27	28 Memorial Day. No meeting.	29	30 Banquet	31		

Schedule of Events

- May 30th: Robotics Banquet at SLEHS, 6 - 9PM, Room 2413.
- June 22nd - 23rd: MARC Competition at Monroe High School
- July 28th - 29th: Maker Faire at The Henry Ford.
- September 6th: Flying Toaster Kick-off meeting.
- September 10th: OCCRA Kickoff.
- September 21st - 22nd: Kettering Kickoff Competition.

SOUTH LYON ROBOTICS

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