Monkey Business

News of the Lynbrook High School Robotics "Funky Monkeys," *FIRST*® Team 846

Don't know what to do next?

Check page four for a list of upcoming events!

In This Issue

Because Robots

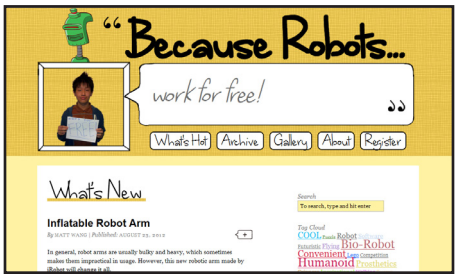
Alumnus raises youth interest in science, technology, and engineering with new project

By Michelle Chang *(Class of '13)*

Former team president, Chinmay Jaju, proposed and led the Because Robots project this spring. The venture was devised as part of his mission to generate interest in science within communities nationwide.

Our team has long viewed the STEM fields as essential pieces of education—keys for not only developing our members as students and engineers, but for building future innovations as well. Having participated in a heavily STEM-influenced program, we realize the importance of encouraging interest in science so higher education can continue producing top engineers and researchers ready to stand upon the shoulders of their predecessors and improve scientific knowledge. It was this vision that Jaju set out to achieve with Because Robots.

The main portion of the project is a website



"Because Robots...work for free!" The site displays user submissions.

(becauserobots.org) planned, programmed, and designed by our team. Its features include the latest videos and research in STEM, as well as blog posts explaining aspects of the displayed works. Jaju first began developing the outlines of the project in April, after his emails of fun science links sparked positive responses

see **BECAUSE ROBOTS**, *Page 2*

Hey Funky Monkeys!

Welcome to Lynbrook Robotics, an organization you'll soon discover is about much more than robotics. We're a team of writers, artists, mathletes, gearheads and most importantly, average people. Robotics will give you a chance to expand your boundaries in a variety of areas—not only in math and science. In addition to building, designing and programming 100+ lb robots, we also write grants for corporate sponsorship and have a plethora of art, writing and administrative tasks that are just as important.

Some advice for new members: take initiative and try something new. You need precisely *zero* experience to participate in 99% of robotics activities, because we're always glad to help you learn. Given the resources the club has to offer, *nothing* is impossible; it's just a matter of how much effort and initiative you're willing to contribute.

While putting in more effort will get you more out of robotics, we don't require anything from you. We encourage you to try new things, and if you're only interested in certain events, you're welcome to come to only those. I'm always happy to answer any questions you might have, so feel free to contact me in person, by e-mail or by chat anytime.

Brian Axelrod
Lynbrook Robotics Co-President 2012-2013

Dear *FIRST* Team 846,

We're looking at a year in front of us filled with potential. With a newly established room on campus, a growing variety of talents, and an endless amount of enthusiasm, we have everything we need to excel as a program and as an FRC team.

But, potential does not mean success— and that's where you come in. Whether you're an aspiring writer, artist, or engineer, it's up to you to discover your strengths and use them for both the growth of the team and, more importantly, for the growth of yourself as an individual. The opportunities here are endless and always inspirational, but make sure you catch them while you can because most of them will only fly by once.

So, whether you're new or here for the fourth time, prepare for a year filled with robots, exploration, and water balloons! I'm honored to be able to serve you and ensure that your experience as a Funky Monkey is funkier than the rest. I'll make sure not only to dedicate myself wholly to the team, but to also do everything I can to inspire the team as it has inspired me.

I believe there is only one thing left to say. For the success of the team: keep an open mind, do what you love to do, and let's make this year none other than the Best !

Diane Wang
Lynbrook Robotics Co-President 2012-2013

Because Robots

Continued from Page 1

from robotics teams around the country. Motivated, Jaju reincarnated his email newsletters as the Because Robots website—a treasure chest of today's research and innovations, handpicked by the bloggers. The site also has a fun, interactive element: over 100 pictures of robotics members and friends holding up signs explaining their love for STEM. Anyone is welcome to submit photos.

"If I can influence one [person] to become a scientist who wasn't originally going to," Jaju said, "that person might create the next life-saving technology. To know that I've impacted someone's life makes it worthwhile."

Summer Enrichment

Members learn new skills, help young kids learn

By Christina Lin *(Class of '13)*

This summer, I worked at a small manufacturing company as an in-house graphic design intern. In the beginning, my position had no particular job description and few expectations. I had wanted to help with programming, but there were no software projects at the moment. On the first day, I was allowed to try my hand at creating a new logo, and from there came overdue requests for redesigning official company stationery and sales presentations.

This summer, honing my Photoshop skills and learning to thrive in a professional work environment was just the beginning. Along the way, I also discovered how to compromise between different artistic tastes and promote my own work.

By Aurea Siu *(Class of '14)*

I worked at Campbell Mini Camp, a four-day robotics camp mentored and organized by the Xbots, a *FIRST*® LEGO® League team from Miller. As an alumni of the Xbots, I feel it is incredibly meaningful to teach kids about robotics with tools they have played with their whole lives: Legos. I also invited [team member] Eric to join this program because of his strong hardware background.

When teaching the little kids how to build and program their robots, I felt they were not only trying to cram all the new information into their heads, but also logically implementing that information while building their robots. I could tell that they made lots of new friends, and on the last day, they looked sad as they were leaving their teammates.

We've been doing this program for three years already, and every year I feel more and more satisfied at what I have accomplished at the end of the program.

see **SUMMER ENRICHMENT**, *Page 4*

Michael Lin [center] with Class 406 at CKSH. He sat in on their classes for a week, participating in class activities such as English projects and tests, while making friends with the students.

Taiwan Ambassador

Michael Lin ventures overseas to experience Taiwanese culture, sharing his experiences with robotics along the way

By Michael Lin *(Class of '14)*

Last school year, I was accepted to partake in Cupertino's Sister City Student Exchange Program, a program that allows select groups of students to explore Taiwanese culture. During my trip, not only did I learn about the culture that I came from, but I also got to share an influential part of my life with the people I met.

Upon arrival in Taiwan, I was introduced to the mayor of HsinChu city. I got to show him some slides and speak with him personally about how *FIRST* is a great program, and was even lucky enough to be accompanied by the English Learning Center Academic Director, who translated my messages to the mayor. For the next three minutes, I explained how big of an impact *FIRST* has made on me—how it combines science, technology, engineering, and mathematics— and about the Funky Monkeys. At the end of the presentation, the mayor asked several questions about the club.

"How can an organization like this help education in Taiwan?" he asked in Mandarin. To answer, I used examples from my personal experience. In the end he was fascinated by *FIRST* and asked to download the presentation onto his laptop.

Later, the HsinChu English Learning Center Academic Director introduced me to Chien-Kung Senior High School's (CKSH) Director of Academic Affairs. Again, I explained about *FIRST* and our club; while I presented I noticed the Director was taking notes while I spoke. At the end of my presentation, the Director of CKSH asked me to present to the entire Senior High student body the next day. However, she requested that I switch from my informative presentation to one that would inspire the students.

I was given one night to edit slides, speak with my translator, and think of how I could inspire the CKSH students. I decided to use my personal experiences in the club to rouse them. I planned on talking about my first impression of the club when I joined, the new friends I made, the skills I learned, and how the robot was not the main point of robotics. I wanted to let the students know that robotics, *FIRST*, and our club, is much more than building something extraordinary. I wanted to let them know how robotics is a place where they can find outreach, business, writing, designing, and even animating opportunities. I wanted them to hear about the parts of robotics that aren't evident at first glance.

> "I wanted to let the students know that robotics, *FIRST*, and our club, is much more than building something extraordinary."

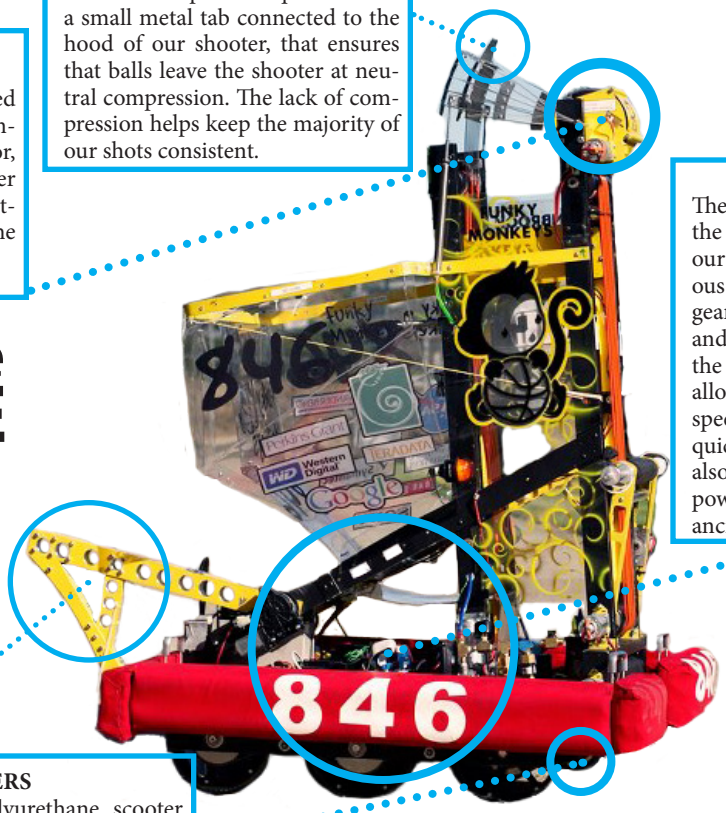
The day of the presentation I was really nervous and exhausted from lack of sleep. I was given five minutes to do a quick run-through with my translator before the school's weekly Friday assembly began. Before I presented, several CKSH faculty members went up to speak about events that wouldw be occurring soon, and in this time my translator and I waited five nerve-racking minutes. My translator and I were finally introduced by the principal near the end of the assembly. During the presentation I tried to keep the students engaged by cracking jokes with my hilarious American-accented Mandarin. I felt silly using such a technique to keep students interested, but once I looked out at their rapt faces, and I knew that I was inspiring them in some way. Before I left, several CKSH students told me they were interested in starting a team. I smiled and gave them a thumbs-up.

Introducing the TAIL OF THE MONKEY

BALL SHOOTER
The shooter is a custom machined, grooved shooter wheel that allows the Tail of the Monkey maximum grip on balls. Its hall effect sensor, paired with a magnet embedded in the shooter wheel, allows us to accurately measure the shooter's speed so our drivers are able to shoot the same distance every time.

BALL COMPLIANCE EQUILIBRATOR
The ball compliance equilibrator is a small metal tab connected to the hood of our shooter, that ensures that balls leave the shooter at neutral compression. The lack of compression helps keep the majority of our shots consistent.

DRIVETRAIN
The drivetrain makes up the wheels and base of our robot, including various components such as gearboxes, motors, shafts and chains. The Tail of the Monkey's drivetrain allows her to run at two speeds so she can travel quickly on the field, yet also maintain a slow, powerful climb while balancing on a bridge.



WEDGE (AKA *THE TAIL*)
The wedge is the robot's namesake—a "tail" used to push down bridges during the game so that the Tail of the Monkey may climb onto the bridge and earn bonus points during a match.

IDLERS
The idlers are polyurethane scooter wheels attached to the front of our drivetrain. They help the robot cross high barriers with ease.

Silicon Valley Regional
March 29-31, 2012 SJSU

In spite of competition challenges, team finds room to grow and learn

By Miles Chan, Christina Lin, and Michelle Chang *(Class of '14, '13, '13)*

Two weeks after our debut at the New York City Regional in mid-March, we geared up for our home game with some uncertainty in our hearts. We hit up the playing field for practice matches hoping that the communication issues from New York would not return to haunt us. In New York we had intermittently lost of control of the robot for seemingly random periods of time, and since then, had not been able to replicate or solve it. Much to our dismay, we experienced the same problems on the field again.

"My dad, my brother, and his friend came just to watch us, and when they finally came, they saw our robot dead, and not moving, and epically failing the only match they saw. I felt bad about their disappointment," said webmaster, sophomore Raphael Chang. "I was in utter disbelief and shock—not because of the fact that we lost—because of the fact that we didn't move at all."

When we finally had communications, however, we were able to watch our robot perform at a high level for the first time. Our shooter was consistently precise, and our drivers could balance the robot on the bridge quickly. With our robot running smoothly, we were eager for more competition.

The next day, we won our first two qualification matches with consistent top-hoop scoring, even in autonomous mode. Meanwhile, other members talked to the judges, many of whom are leaders in the technology industry. They were impressed by our pit crew's knowledge and clear explanations as we presented our robot's features. At the end of qualification matches, we were ranked 12th and allied with Athenian Robotics Collective and Aragon Robotics to enter the quarterfinals.

However, our team suffered a catastrophic blow in our second quarterfinal match. Our 2CAN, which controls everything from our robot's speed controllers to the motors, did not turn on properly, rendering our robot immobile. As a result, we could not advance to the semifinals.

Though sobered by numerous challenges, we were ecstatic to be honored with the Innovation in Control award at the 2012 Silicon Valley Regional , which recognized our software for aspects such as the auto-aiming system. Our growth as both individuals and a team this season was reflected by the awards we picked up at our two competitions, recognizing our professionalism and understanding of our robot. This was a successful season every Funky Monkey can look back proudly on.

A judge chats with Anurag, Brian, and Alric, impressed by the insight that went into our Ball Complinance Equilibrator (see above).

Senior Goodbyes

Reflections and goodbyes of graduating members of 2012

A year ago, I sat down with a pen and a piece of paper, ready to write about my fantastic, life-changing high school experiences that would wow admissions officers and show them what a strong, obstacle-defying student I was. Naturally, I came up with nothing. Even scouring through my mind, recalling past extracurriculars—Yearbook, the Tech, the *Korea Daily*—I couldn't think of anything in particular that had me defying my limits, breaking boundaries, reveling in success.

Then, I thought of Robotics—how, when I joined, I was intimidated by everything: the software and hardware and brilliant upperclassmen everywhere; how I eventually managed to find a niche in the midst of all these computer geniuses; how I learned to use my skills to help the team succeed. It was Robotics, I furiously scribbled, where I—the atypical Lynbrook student who had never before gotten an A in math—learned to step out of my comfort zone. In it, I learned to lead the team newsletter to greater heights, write to corporate sponsors for grants the team depended on, and slave over award essays in the dead of night (which prepared me greatly for AP Lit). These experiences, I realized, had taught me valuable life lessons: that opportunity is wherever you search; that you can succeed anywhere by doing your best; that sometimes you just have to take a chance. Looking back, I have to say that Robotics has been one of the most valuable and eye-opening experiences in my life—and because of it, I'm looking forward.

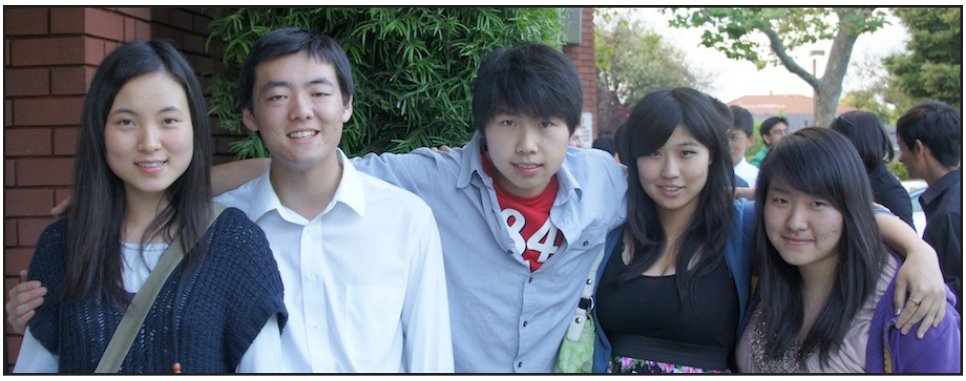
—Jocelyn Shieh

When I first joined the Funky Monkeys, I thought that it would be just another fun programming project, albeit one that would control something rather different than the usual. I found, however, something far beyond what I imagined: great friends, awesome experiences, and incredible amounts of fun. It's not just a technical club, no matter how much it might seem so at first glance; there's so much more available to explore, from grant-writing to teaching.

I regret joining later than most, only really becoming active in my junior year: as a quick note of advice to underclassmen, get involved! There's really no good reason not to, and all of the people are willing to help you learn—the skills I learned and practiced in the past two years will continue to benefit me well into the future, and the friendships I made will last a lifetime.

For me, a robot is much more than the sum total of its parts: more than the hours of design that establish its fit, more than the software and electronics that give it its functions, and more than the black-and-yellow artwork that creates its form. It is the symbol of a team of brilliant, hard-working, and dedicated students that, with the ever-appreciated assistance of experienced mentors, has once again made it through the ordeal of build season. So, though my primary interests haven't changed as a direct result of my involvement in robotics, they've certainly expanded: the team gave me an opportunity to explore things well outside of my comfort zone, giving me the confidence and silent support to succeed. Among all of the activities that I've participated in through my time at Lynbrook, I believe that being part of *FIRST* Team 846 has been one of the most influential aspects of my life.

—Robert Ying



Our 2012 seniors [Annie Yang, Robert Ying, Alric Siu, Jocelyn Shieh, and Lucy Mou] at our year-end banquet, which was held at Kabul, an Afghan restaurant.

Four years in the future seems like a long time. But four years in the past feels like just yesterday. It feels strange to say good-bye to this team; didn't I just say "hi"? Nostalgia really hits hard.

It's sad, but at the same time, I feel reassured knowing I'm not just packing my bags and leaving. I'll be taking the skills I gained here, both technical and non-technical, the connections to people I never would have met, and the newfound interests that will guide me through college. As for how I feel about college—to be honest, I'm nervous. But it's a good kind of nervous, much like how I felt when I first joined Robotics. That turned out well, so I'm optimistic.

Last words of senior wisdom: work ahead, don't take anything for granted, focus when you need to, but remember to have fun, and wear your Robotics sweater whether it's cold or hot.

—Annie Yang

Summer Enrichment

Continued from Page 2

By Michael Lin *(Class of '14)*

This summer I worked at the Tech Museum for an eight week program called Camp Galileo. There, I taught hundreds of campers how to build Lego robots.

The curriculum of the class consisted of building basic drivetrains, building bionic arms, and creating a wireless bluetooth NXT controller. I was not surprised to find most of the campers redesigning their arms and robots to make them better—all of the campers were extremely intelligent (publishing books, knowing ten different programming languages, etc.). Although every day was exhausting because I had to keep my energy level high, I found my time in the camp to be an experience I will never forget.

By Diane Wang *(Class of '13)*

I started my internship at Lockheed Martin Space Systems Company with little knowledge of how flight hardware was made, but quickly grew accustomed when I realized that the processes were similar to our processes in robotics. Creating drawings, programming CNC's, and creating parts were all familiar to me at first glance.

After spending time coordinating efforts between the manufacturing floor and the machine shop, I learned the basics of designing web pages and using databases. With those skills, I created a web page that changed the process of certifying bonds from paper to online, increasing both efficiency and convenience.

Everything from getting the internship, to being able to fix a CNC were all skills gained from robotics. Thank you, robotics, for helping me in ways that I never expected!

Upcoming Events

Active Member Meeting
(Tuesdays 7:00 - 9:00 pm)
Held in room 608. Anyone is welcome!

Fleet Week 2012 *(Oct 6 - 7)*
Help sell concessions in San Francisco, and watch the U.S. Navy's Blue Angels fly!

WRRF CalGames 2012 *(Oct 12 - 13)*
Hosted by *FIRST* Team 100 at Woodside High School. Get your first taste of an FRC® game!

First Semester Team Workshops *(Sept - Dec)*
Learn the basics of the software and principals we use to design our robot!

2012 *FIRST* Safety Animation Competition
(Oct - Dec)
Help us storyboard and create a 3D animation!

FRC 2012 - 2013 Season Kickoff (Jan 5)
San Jose State University