



# MONKEY BUSINESS



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

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## Upcoming Events

### Spring 2017

- Salt Lake City Regional (March 8 - 11)
- Silicon Valley Regional (March 29 - April 1)

## Returning Alumni

The previous monkey generations are still connected to our team

Eesha D. (*sophomore*)

Every year, the seniors of the team leave for college, taking with them the years of experience and knowledge that we prize. And every year, the alumni regularly come back to visit. They always have a connection to robotics, and the members they leave behind. It's hard to leave your passion, a passion sustained for four years, and walk out once you graduate. They stop by any worksessions



Alumni (middle) Brian Axelrod discusses robot ideas with the team during the first day of build season.

they can, and even come to our team meetings to help us prepare for build season.

In fact, their passion runs so deep, some of them even become mentors for teams that they live near. One mentor we are blessed to have for the past two years is Shalmali Joshi, a former alumnus' older sister. Her younger brother, Yash Joshi, graduated as part of the Class of 2016, and left our robotics team. (Funnily enough, he started to mentor a team in New York.) Shalmali has a job here, and

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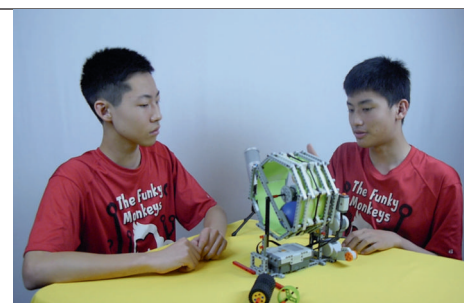
## Monkey Box

Our team's very own video channel

Eesha D. (*sophomore*), Anika S. (*junior*)

What do you think of when you hear "Monkey Box"? To us Funky Monkeys, we think of our new YouTube channel! In this YouTube channel, we hope to help rookie teams with common problems and share advance mechanisms with other FRC teams.

Our videos will be enjoyable while teaching important concepts. With these videos, we hope to reach out to people, especially other FRC teams, who want to learn about the topics we cover. We also have already recorded one video! In the video, we talked about ball centering, using a talk show host and guest approach. This not only made the videos more exciting to watch, it also created an easy-going environment on set. With spreading our knowledge, we want to convey a fun and easy way of learning to inspire people of all ages to pursue a career in STEM. By spreading our knowledge, we hope to help not only our own community to learn, but also touch



James Jiao (left) and Jing-Chen Peng (right) film Monkey Box's first episode: Ball Centering

people worldwide in the videos we make.

Over the summer, we started with researching what materials we would need for our videos. With general exploration, we learned how to make good videos and what it would take to create a successful channel. As we dug in deeper, we split our project into four sections: the intro and outro animations for our video, editing, equipment, and script writing. As more members started growing fond of this initiative, we created mini-teams for each part. At the end, when we put all our work together to see the release of our first video, and saw our views reach 2,134

see **MONKEY BOX**, Page 3

## Funky Thoughts

Our firsthand experience and thoughts on the concept of "Safety first"

Arthur Z. (*junior*)

While anxiously awaiting the conclusion of the match, one Lynbrook student spots a flashlight that has fallen off the robot. Once the match is done, he walks over and unknowingly steps on a field defense in an effort to retrieve the fallen flashlight. Little does he know that such a simple violation will cost him and his team the chance to

see **FUNKY THOUGHTS**, Page 3

## Fall Workshops

How our team prepares the new aspiring monkeys entering our team

Eesha Deepak (*sophomore*)

Every year, our team welcomes many new members to join us to design, fabricate, and program a robot to compete in the FIRST Robotics Challenge. That's quite a handful for these newly joined students, so every year our experienced members plan and lead a six-week workshop get them up to speed. Yet, educating our newer members is only

see **FALL WORKSHOPS**, Page 4



## Dean's List Summit

A behind the scenes look at the inner workings of FIRST.

Shikhar Jagadeesh (*senior*)

This past competition I was one of 20 FIRST Participants to be awarded the Dean's List Award, an award meant recognize high school sophomores' and juniors' exemplary passion and effectiveness in achieving the mission of FIRST. This summer I traveled to Manchester, MA as a part of the Dean's List Summit, an event that all the Dean's List Winners are invited to. The Dean's List Summit is a jam-packed two days filled with lunches and dinners with FIRST sponsors, tours of some cool places, and conferences.



Shikhar Jagadeesh receives the title of Dean's List Winner at the Einstein's Field during the 2016 FIRST World Championships

My first day at Manchester was the only day that I did not have to do anything, so I spent my lunch and dinner that day eating pies (that's east coast for pizza). I also got to meet all the other winners and we had dinner together while getting to know each other. The next day I had to wake up at 5:30 AM to begin the trip to the Massachusetts Institute of Technology for a tour of the campus. At MIT, we got to see a lot of the beautiful campus and although we were not able to see people's projects, I was still engrossed in the things that were on display especially the LEGO room, a room where innovations in LEGO technology are made. That same day we went to the mansion of the founder of FIRST, Dean Kamen. We were given a tour of his house and got to see the gifts that his company, DEKA, makes for him every year. In addition to the tour we were invited to the Supporter Summit Dinner, which is to recognize all the supporters of FIRST. After a long day, I was exhausted and fell asleep as soon as I returned to the hotel.

The next day started with the Supporter Summit Brunch where the Supporters could ask us, the FRC Dean's List Winners, about the Kit of Parts and what improvements they could make to it, so we can get the most out of it. After about an hour-long discussion we made our way the FIRST HQ, where we got to meet some of the FIRST staff and talked to them about Stronghold, what we liked and did not like about the game. After another hour-long discussion, we made our way to DEKA, a research and development corporation founded by Dean Kamen in 1982. Some of their notable inventions are the iBot wheelchair, the Segway, the Luke Arm (an advanced prosthesis), and HomeChoice (a portable dialysis

see **DEAN'S LIST SUMMIT**, Page 3

## World Robot Olympiad Journey

A student's inspiring and successful robotics adventure.

Nikash Walia (*sophomore*)

Robotics. One of the most important aspects of my life. Perhaps one of the things that defines who I am.

My name is Nikash Walia, current sophomore at Lynbrook High School. My journey with robots is longer, and much, much more elaborate than the two years I have been at my renowned school.

In 6th grade, five boys interested in all things computers were recommended by their computer science teacher to an acquaintance of his, one who introduced them to the world of LEGO robotics. Out of those five young kids, one would become truly intrigued and so absorbed that all other interests took a backseat, and was driven to know everything about his first LEGO Mindstorms kit and participate in competitions for the next 5 years. I am that boy.



Nikash Walia (right) and his WRO team pose for a picture after winning the the WRO 2016 USA Nationals 1st place trophy, advancing to compete at the World stage.

Although my mentor was exceptional and the groundwork he created for me was beyond what was called for, nevertheless, for my constant inquiries, his base of knowledge was limited, and I would spend the following years struggling to grasp ideas behind the functioning of robots on YouTube videos. I would read countless books. Parts were hard to come by in my small town in central India, books and parts had to be ordered from US, and were expensive. I saved everything I got on birthdays and festivals, and my parents were generous because they could see my drive. I fell several times, wanted to give up several times, for I did not know who to turn to when I was stuck. But I got back up again

see **WORLD ROBOT OLYMPIAD JOURNEY**, Page 4

*Monkey Box Continued...*

views, we knew we had accomplished something great.

As mentioned before, the videos will showcase common problems in our robots and advanced mechanisms we implemented; this will help other teams understand how we solved those



Yiu-On Li (left) and James Jiao (right) edit out a 5 minute clip from hours of footage

problems. It is a tool that will always be easily accessible to anyone who wants to learn about what we describe.

In addition to creating and competing with robots, this new aspect of team is another way new members can get involved, and learn something new through the process of creating the videos. Spreading our knowledge is inevitable, so why not spread it worldwide?

*Funky Thoughts Continued...*

compete for the rest of CalGames.

Safety is paramount and should indeed be the golden rule, no matter what the activity. But how safety rules are enforced are just as important as safety itself. Consider if someone unknowingly commits a minor safety infraction. If they are severely penalized for it, the punishment defeats its purpose: encouraging people to act safely. Severely punishing a team for a negligible action both demoralizes the team and creates resentment towards the rules and/or officials. Instead, teams should be given a warning for a minor infraction. Only after repeatedly committing the minor infraction should a team be severely penalized.

Additionally, the process by which yellow cards are accumulated should be adjusted as well. In my opinion, it is perfectly acceptable that teams be penalized for violations committed by individual alliances, as it is a common practice in team sports. However, these *"Severely punishing a team for a negligible action demoralizes the team"*

violations should not accumulate through the entire duration of eliminations. Like athletes on sports teams, pit members are prone to making mistakes by human nature. Because of this, it is

unreasonable, in my opinion, to expect three pit crews to consistently avoid committing violations throughout all their qualification matches. Instead, an alliance's card violations should be discarded after a set number of matches. In doing so, alliances must still act safely, but are not constantly under pressure of being disqualified if they were to obtain a card.

Even though we cannot change what happened during CalGames, we can make sure that we don't make the same mistake again. We must remain diligent and think ahead before acting. It is unlikely that

*"But there is no sense in having identical punishments for wholly different infractions."*

FIRST will alter how they issue punishments in the near future, but hopefully they recognize some of the issues with how they currently deal with infractions, and are able to develop a solution. To wrap up my thoughts, I believe that our safety infraction at CalGames does not match a punishment of such severity, and that teams should be punished for mistakes that they themselves have made. So, after reading about this issue and some of my opinions, what do you think?

*Returning Alumni Continued...*

always sticks around us girls to help us in any aspect she can. She sheds light on some ideas we would have never seen before. She shares her experiences, helps us with strategy and in the shop, and even meets with us to go watch movies! Another mentor we are lucky to have is Johnathan Chai. He has a job here as well, and is a huge help in strategic plans for our robot. He also lends a hand with the business aspects of robotics, and gives us tips and tricks to succeed.

Right when the alumni hear something of their interest, they rush over here and help us. This year in particular, they have been assisting with the set-up our machines. Last year, seniors Owen and Rahul introduced a brand-new CNC into our shop after securing a grant with Tormach. Since then, they've put hours into the machines milling parts during the build season. During the summer of this year, we've added two new mills to our equipment family and started upgrading the CNC's software. Knowing that our last year's seniors had experience setting these programs up, we called them in to

join us in rewiring and reprogramming controllers for the CNCs. Owen also has other interests, such as photography, and was a major help in figuring things out for one of our projects, Monkey Box (see page \_\_\_). Srinjoy, another graduated senior, helped with networking the CNCs. He even helped us setup our new monitors over the summer.

One iconic day in the FRC season is kickoff day, where teams all over the world gather to watch the unveiling of the season's game. We always hold a kickoff party at a member's house, and this year, many of the alumni signed up to join us and relive their robotics memories. They are all curious and still want to help us form a robot for our new game. One-third of the people going to the party are the alumni. They will always stay with us and help us, whether that is in person or online. Just the fact that our old teammates want to come back and help shows the true impact of robotics on our lives!

*Dean's List Summit Continued...*

machine) all of which I got to see. Close to the end of another long day, we went to the Dean's List Summit Dinner which was held at FIRST HQ with guest speaker Woodie Flowers, a professor of mechanical engineering at MIT and one of the founders of FIRST. At the end of this trip I had made many new friends and was ready to come back home and be an active member in the FIRST community.



Shikhar Jagadeesh (middle) poses for a picture with Woodie Flowers (left), the Distinguished Advisor of FIRST

*WRO Journey Continued...*

and represented India in the 2013 World Robot Olympiad. Then once more, I crashed. My 2014 season was an utter failure, failing to make it past the preliminaries with the intense level of competition I faced against more experienced people from cities where mentoring was available. But I never gave up. Enthusiasm feeds enthusiasm, I believe and know to be true, for my success drove me to win the championship this year in Illinois and be selected to represent USA in the 2016 World Robot Olympiad. But there's more.

When my cousin saw me work on my robots, he was hooked. My years of struggling on my own gave me a soft corner for kids who wanted to know and learn. Looking at his interest, I decided to form an elementary team for him and mentor them. In the process, more kids got interested, and we formed an all-girls team too. Now I had three times the workload I initially had. Not only had I to work on my own challenge, but also on the elementary challenge, and to train these six aspiring roboticists for the competition in three months!

Interestingly, it was not just robotics that I was teaching. The two trios needed to function as one unit and not as a chaotic group of young kids who couldn't

*"And this is just the first step of mentoring, of teaching, of being taught, and of developing bonds"*

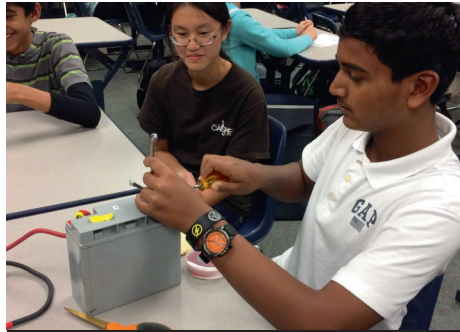
focus. So, rules were required. Mandates pertaining to how to handle the robot, ways to tackle potential errors, and most importantly, how to behave as to not create problems for themselves were gone over time and again. I felt I had suddenly become a full-blown teacher from a student.

As my first year as a teacher, I was not well-acquainted with how to deal with kids' various problems and their manifestations. As time progressed, these six kids helped me realize that without a personal relationship with each and every one of them, they would not learn anything. Each individual is unique, and thus, each individual's talents must be exploited to benefit them the most. I taught them many things, but they too played no small role in my learning. These teams would go on to win the first and sixth place positions in the USA nationals of the World Robot Olympiad. And this is just the first step on a journey of mentoring, of teaching, of being taught, and of developing bonds.

*Full Workshops Continued...*

half the reason we host these workshops.

We have five workshops, and each one, our leaders developed themselves. Jing-Chen Peng (junior), this year's leader for the machining workshops mentioned, "In trying to plan for and organize these workshops, I had to learn how communicate effectively with others



Yutong Liu (left) and Atharva Gunda (right) learn how to properly handle and wire the robot's batteries

through email. I've also gained experience in managing a group of people to accomplish a task, in this case finishing the students' parts." Jing-Chen learned to work with others, and developed the organizational skills needed to manage a workshop. Not to mention he delivered a hands-on experience to the newer members, giving them a jumpstart into the upcoming season.

Another amazing experience was for the head of the animation workshops.

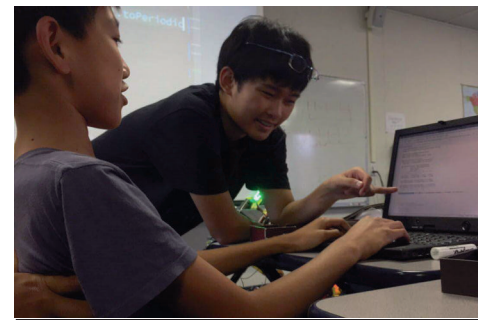
*"I wanted students to develop an awareness and an appreciation of computer graphics and its applications."*

Brian Lo (senior), taught the students things of their interest. "They got a glimpse of how Maya is incorporated in the real world, like in Pixar animations, Game of Thrones special effects, and Halo 4 graphics. I wanted students to develop an awareness and an appreciation of computer graphics and its applications. To further develop their passion for CG, I encouraged students to have fun and express their creativity. In one session, members learned to animate humans via virtual skeletons and animated characters dancing to the Harlem Shake with their own unique moves. Upon completion of their dances and dabs, I compiled their separate animations into a complete Harlem Shake video." Brian is usually a quiet and reserved person, so putting together this workshop really made him

step outside his comfort zone. As an extremely talented animator, Brian transfers his skills and techniques to the members in this comprehensive workshop.

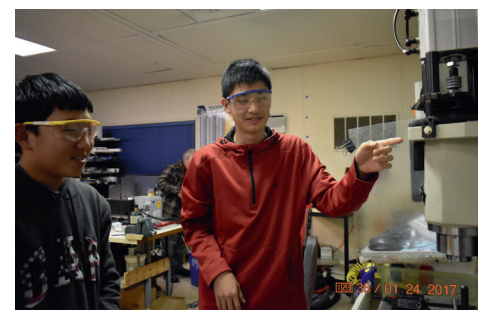
As another member Andrew Ng (sophomore) leading the CAD workshops said, "I was in charge of preparing course material for the workshops, which included making instructional slideshows and models for students to work on." People often say that the best way to learn is to teach the material to a class. To get to be able to explain something well, the teacher must have an extremely solid background in the subject. While preparing for the lectures, Andrew practiced his CAD assembly skills by creating projects for the students to work on. As a result, we have many new members able to help in designing our robot during build season.

Our workshops are designed to allow



Andy Chun (right) points out a potential error in Jonah Soong's (left) code

everyone to be ready for the upcoming season, both the newer members and the more experienced ones. It is also an effective way for our veteran members and new members to start collaborating and getting to know one another. This gives a great start to our build season, and helps us all refresh our memory before the long six weeks. Not only do these workshops benefit those attending the workshops, but they allow the presenters to be even more experienced in their respective fields and learn how to teach an audience without boring lectures.



Jing-Chen Peng (right) points the newly installed power drawbar on the CNC to Zachary Wu (left)