



Engineering Notebook FTC

Team 5420

2014-2015

By: Michael Attanasio, Eric Liu, and Andrew Rojas



Michael Attanasio

Michael is currently an eleventh grader attending Los Altos High School. His grades are exceptional! He has held a GPA greater than a 4.3 throughout her high school career. Along with his academic classes, he is also a dedicated member of several clubs. He is even a cabinet member of one of these clubs.

Here is a list of some interesting facts about him:

- Has two younger sisters and one younger brother
- Devoted member of Key Club, FBLA, I.T./Robotics, Eco-Club, and Mock Trial
- Hobbies: playing Pokémon, watching television, sleeping, and eating
- In his free time, he likes to go online and eat food looking up anything that he finds interesting
- He has been to Mexico several times and even shares a vacation house with his family in Mexico
- He has never completely finished a videogame in his life
- Favorite food: Any and all food besides tomatoes
- He has attended over 5 concerts in the past 3 years
- Wants to attend UCLA or Stanford University
- Wants to become an anesthesiologist or psychologist



"I joined FTC because I have always loved the adrenaline that comes with competing. I also love the friendly environment of FTC."

Eric Liu

Eric is currently an eleventh grader attending Los Altos High School. His grades are exceptional! He has held a GPA greater than 4.0 throughout his high school career. In fact he hasn't gotten a "B" yet in high school. Along with his academic skills he is also highly involved in many clubs.

Here is a list of some interesting facts about him:

- Has an older sister
- Devoted member of Key Club and Autism Youth Ambassadors
- President of Future Business Leaders of America Club
- Hobbies: basketball, playing computer games, and listening to music
- Was born in Taiwan
- Bilingual: English and Chinese
- Part of IT/Robotics Team
- Favorite Food: Bacon
- Wants to attend UC Berkeley
- Wants to major in computer science or business
- Is very competitive
- Huge Denver Broncos fan
- Loves the Los Angeles Lakers

"I have always been extremely competitive. I love a challenge and when I first saw FTC, I immediately fell in love with it."



Andrew Rojas

Andrew is currently an eleventh grader attending Los Altos High School. His grades are astounding! He has held a GPA greater than a 4.3 throughout his two years in high school. Along with academics, he also plays Tennis for the Los Altos Varsity Tennis Team. In addition, he is an active member in several different clubs.

Here are some interesting facts about Andrew:

- He has one older and one younger sister
- A member of Science Olympiad and the California Scholarship Federation
- Hobbies: Tennis, sleeping, playing video games, building computers
- Has never been anywhere outside of Nevada, Arizona, and California
- Builds robots and computers for The Los Altos Academy of Engineering
- Competed in two robotics competitions for the Los Altos Academy of Engineering
- Wants to be a computer scientist
- Wants to attend Stanford or UC Berkeley
- Is ranked 8th out of all the students in Pre-Calculus
- Favorite song: "Thrift Shop" by Macklemore
- Favorite Artist: The Killers

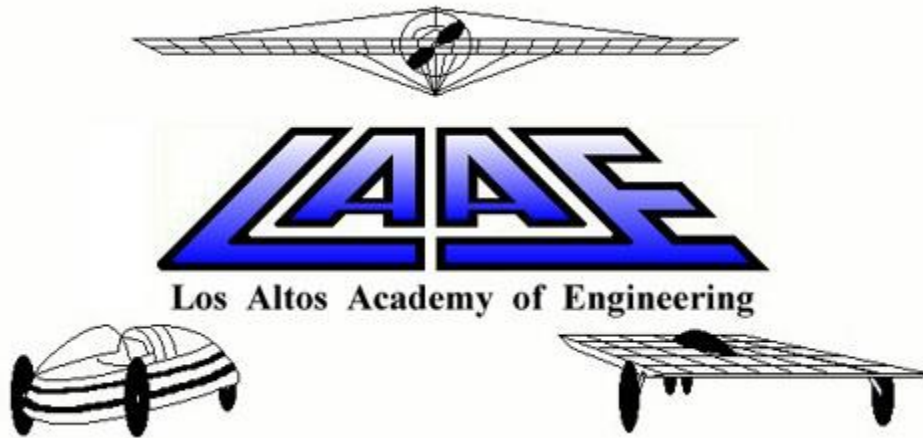


"I've always wanted to become a computer programmer. I joined FTC because it would allow me to expand my knowledge in programming."

Team 5420

Los Altos Academy of Engineering

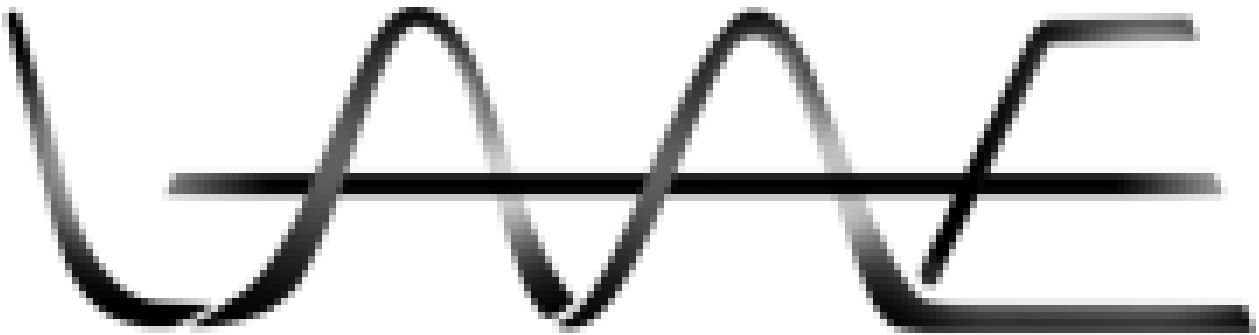
LAAE



Season Highlights / Summary

Team 5420

This competition tested the perseverance of our team. From the time we began working on our robot, to the date of the competition, our team has been grinding to do the best that we could. Team 5420 comes from a small town. We come from Hacienda Heights and at our school, Los Altos High School. We have a rich and historic program known as Los Altos Academy of Engineering. Our program has multiple teams, most of which work towards competing at an Electrathon. However, in the program there is a section known as robotics. We, representing Los Altos Academy of Engineering are funded by countless of sponsors, including Costco, AMC, and other small businesses in our city. This year has been especially difficult as we have adopted a new team. In recent years, we would compete with only one team. This year, we have recruited more people and therefore we split the team into two. We, the veteran team, have acquired more responsibility as we must help our rookie team in order for them to succeed. Thus, we have had quite an interesting journey. Our journey to the competition this year has been far harder than previous ones, but that is precisely what makes this competition so exhilarating. The journey of overcoming challenges and hardships and the ability to persevere is what makes it so fun. We have had countless of obstacles that we needed to overcome such as our Plexiglas breaking a week before the competition. The team needed to improvise and come up with an alternative strategy to our original plan. Our robot may not be perfect nor the best, but we come with an adventure-filled journey, one that we shall never forget. We arrive at this competition, with nothing but a humble attitude as we are blessed with the support we receive from our community and hope we can do our best to represent that community.



Los Altos Academy of Engineering Robotics Team

Monday, September 15, 2014: 3 - 6 p.m.

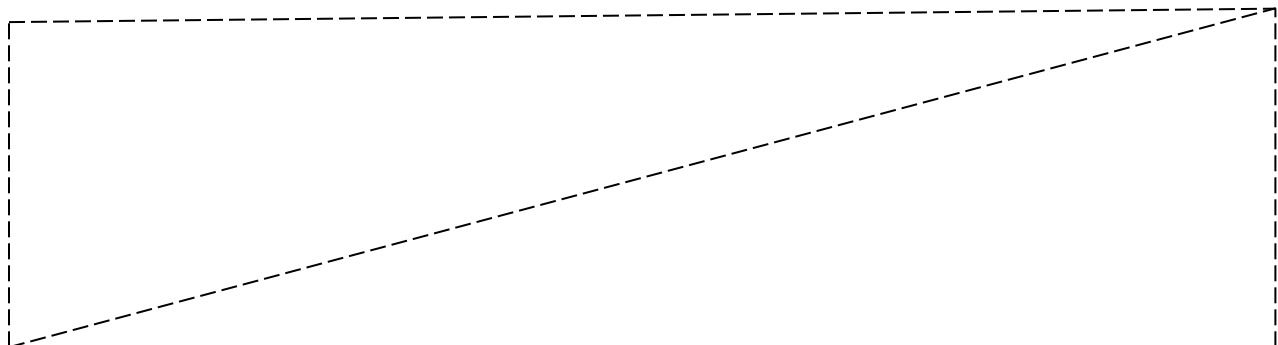
Session #1

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Brainstormed methods on how we wanted to approach the challenge.	As a group we wanted to come to a consensus on which area we wanted to emphasize in the competition. For example, the group voted for aiming at the smallest rolling goal unless we had a robot that could reach the taller goals.
Discussed the idea of pushing the goal down.	The team came up with the idea of pushing the rolling goal down and seeing if we can put the balls into the goal while it is on the ground and then lift the goal back on with the balls inside it.
Organized a team budget	There were many parts that needed to be replaced. These parts included sensors, broken Tetrix pieces and motors. We organized the pieces to determine what pieces we needed. Then we made a spread sheet and listed all the items we needed to buy.



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Wednesday, September 17, 2014: 3 - 6 p.m.

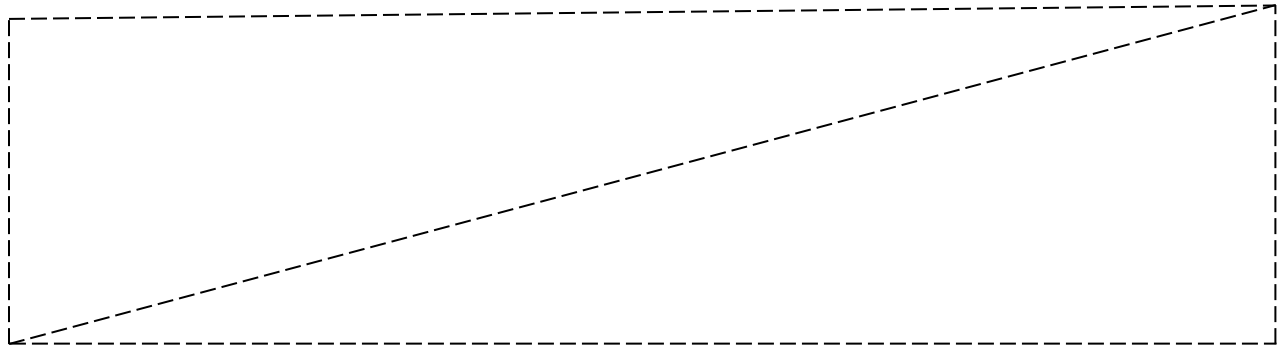
Session #2

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Discussed with the second Los Altos team competing as to possible designs for the robot	As a team, we thought it was in our best interest to get second-hand opinions as to our approach for the design of the robot. Discussing with the second team also allowed our team to get insight as to other possible designs and tactics going forward
Furthered the budget and parts list	The team jointly decided that replacing pieces was not enough moving into this competition, so we looked at purchasing new parts and pieces. We completed the spreadsheet which listed the items and prices of what we want to purchase and hope to put the order through as soon as possible.
Printed the rules and began to read through them	This team knows from past experience how crucial it is to read through the rules ahead of time, so we wanted to do this as soon as possible. We specifically focused on the penalties of the driver controlled period, seeing as how our current approach to that period of time is not the norm.



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Friday, September 19, 2014: 1 - 3 p.m.

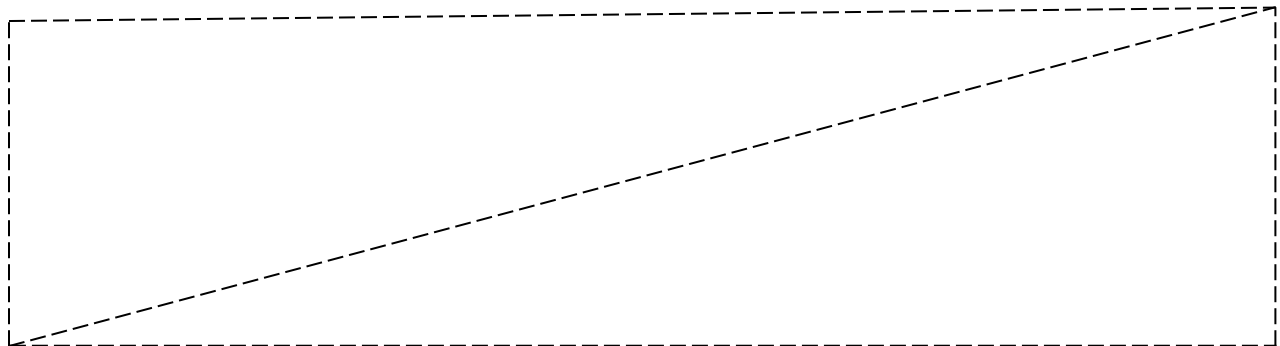
Session #3

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Began looking online at parts to help with the competition	We currently have an ample amount of pieces to be able to make a robot if need be. But with the budget that we have it would be beneficial to order some new parts that could possibly allow us to further our robot's functionality to another level.
Began reviewing code from last year to refresh our memories	Frankly, after all this time all the code starts to leave our minds, so it's helpful to look back and see how we approached programming last year in order to make sure that we are ready to begin programming this year.
Organized all pieces	With the amount of pieces that we currently have, it was good for us to tidy them all up and then this allows us to know where everything is and to take an inventory of currently available parts for use. This will also help with planning the new parts that we need for this year.



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Monday, September 22, 2014: 3 - 6 p.m.

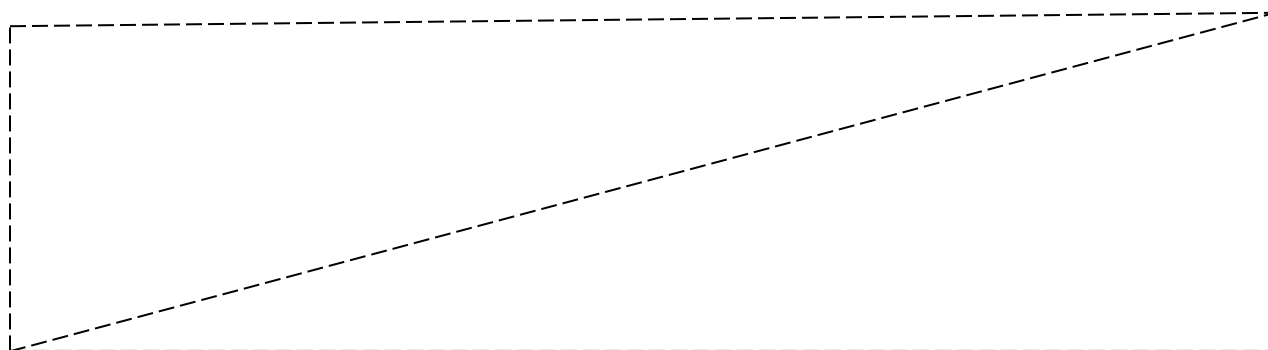
Session #4

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Reviewed the rules of FTC	To make sure our ideas for our robot followed FTC rules we needed to read the rules. Our team went over the rules to check for any possible changes in rules and a rule that we might be breaking.
Worked on registering the team	The team noticed a change in the rules involving background checks, thus complicating the registration process. We are in the process of registering the coach and have registered up to the point of the background check.
Continued organizing the FTC kits.	Our team over the past few years has operated inefficiently with unorganized kits, forcing us to allocate times to find the pieces rather than building. We continued organizing the boxes dividing materials into the groups such as aluminum Tetrix pieces and wires.



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Wednesday, September 24, 2014: 3 - 6 p.m.

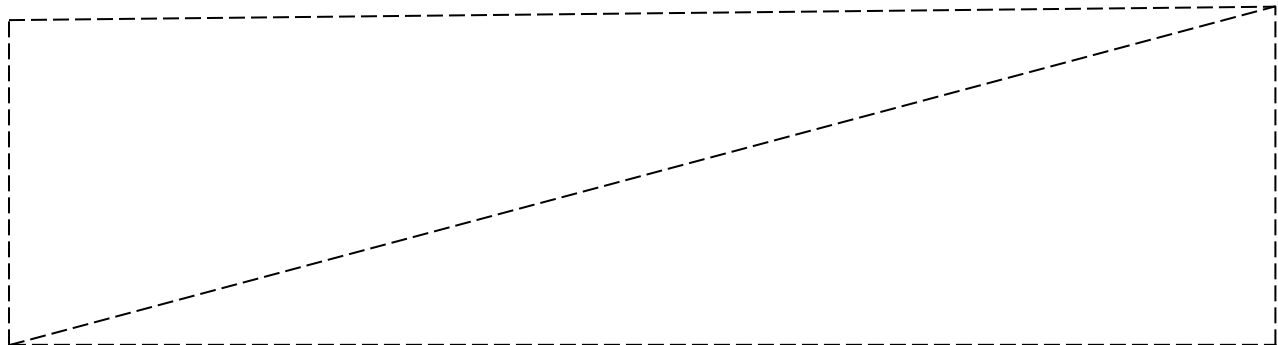
Session #5

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Went online to look up programming resources for our sister team	Since our sister team is all new to the FTC game, and we are the veterans, we decided that it would be in both of our best interests to give them enough material so they can learn it and then if they have questions after having tried to figure it out themselves, then we can help them to save both of our teams time.
Tried out Labview	Labview is something new for us, so we decided that we would take a look at it to maybe see if there are many advantages to doing Labview over RobotC. However, we just don't have the time to learn it and it just doesn't give us the control we need
Took apart our old robot	Even though we didn't want to do it, we took apart our old robot for the sheer fact that we need pieces that are on it. So we finished taking it apart, so that way we are good to go from here. Time to say goodbye.



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Friday, September 26, 2014: 1 - 3 p.m.

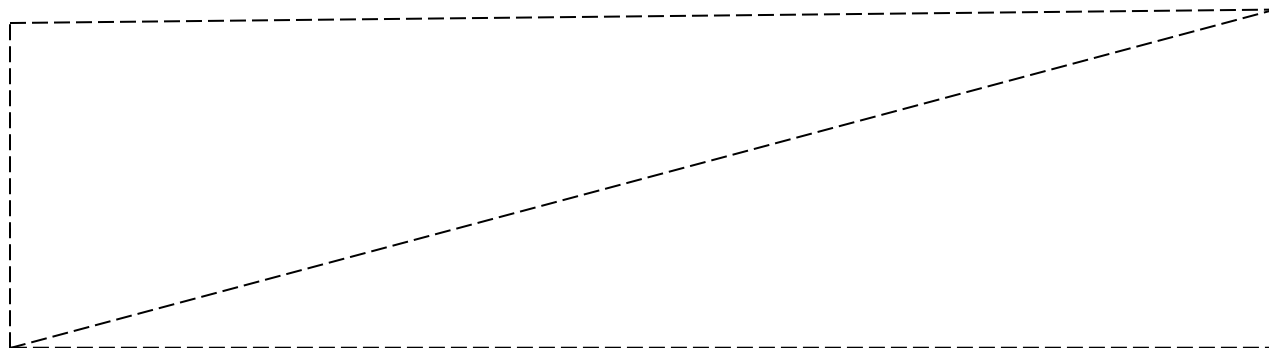
Session #6

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Started registering for our team as well as our sister team that we are newly creating	This year, the program we are a part of, The Los Altos Academy of Engineering, has decided that it would be beneficial to have two teams, so an experienced and inexperienced team, so, to make sure that everything is good on a sign-up level, we want to get that out of the way
Began going over all the basic uses of each and every piece that we have so we know what we have to work with.	It's always good to refresh our abilities and to make sure that we are fully familiar with any all the basic essentials of being able to build a robot before we begin making a very intricate robot for the competition
Began strategizing on a per section basis	As a team, we usually decide that a type of divide and conquer strategy helps us take on each part of our robot and then focus and every part we need to do before we have a completely fully functioning robot.



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Monday, September 29, 2014: 3 - 6 p.m.

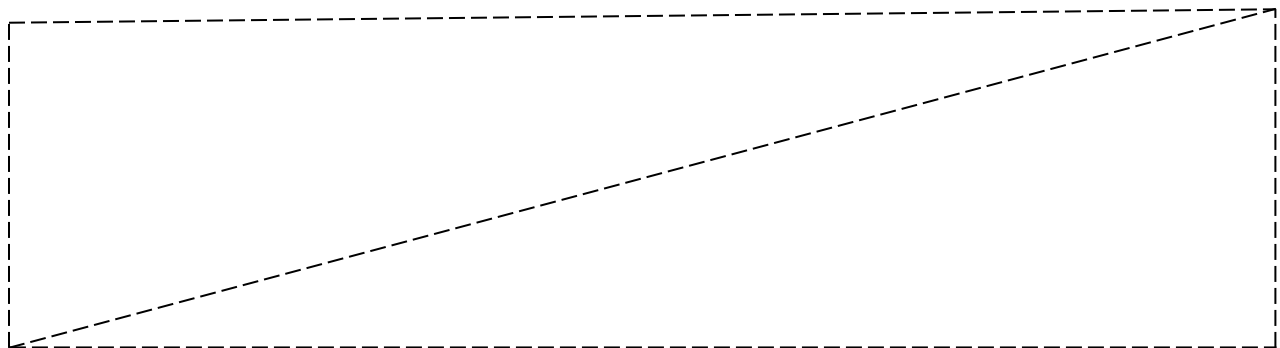
Session #7

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Registered our coach on the new volunteer background check.	We were initially confused by the new background check rule. Thus, our members did some researching and contacted First Tech to inquire about the new required background check. After learning about the new rule FTC implemented, we submitted our background check.
The team did some researching on old robots to come up with ideas.	Many First Tech robots have been built before, and we wanted to utilize the vast amounts of information out there. We watched many robots from previous years and competitions to give us inspiration.
Divided the task among our three members.	We had our lead programmer Andrew focus on programming. Michael focused on developing a small scale fork lift with Legos to give us a better idea on how it functions and if it worked effectively we would build it with Tetrix pieces. Meanwhile, I worked on developing a mechanism using zip ties that would hold and grab the balls.



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Wednesday, October 1, 2014: 1 - 3 p.m.

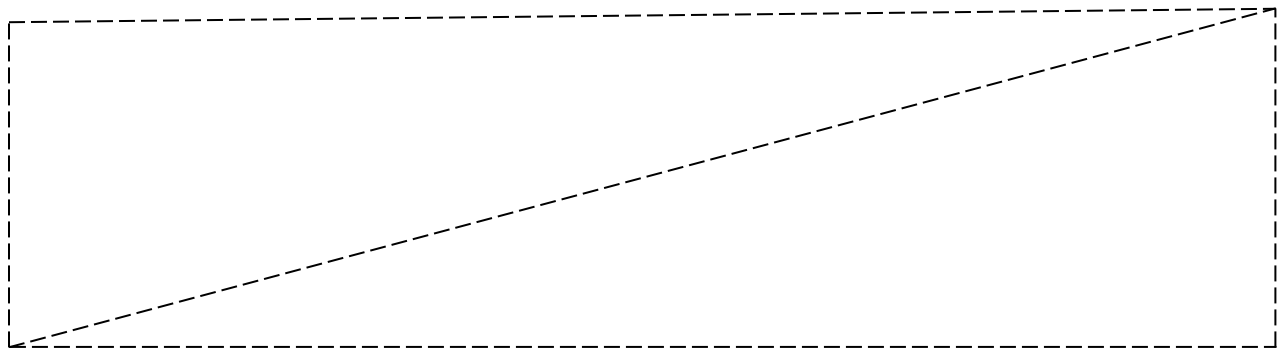
Session #8

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Continued to work on building an NXT forklift	The team decided it would be in our best interest to build the forklift design in the area we felt most comfortable in, and then applied the knowledge of a forklift design learned from the model, and applying it to the Tetrix pieces and in the competition.
Continued to sort the pieces	Organization will be key in the competition so we want to finish sorting so that at competition, we will have no wasted time looking for pieces or realizing the pieces we have don't work. We believe in spending time on it now so we don't have to later.
Began organizing these pages	We have decided that we will just put everything inside of a binder this year, as we feel it is easiest to just type these up, print them out, and then be done with them.



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Friday, October 3, 2014: 1 - 3 p.m.

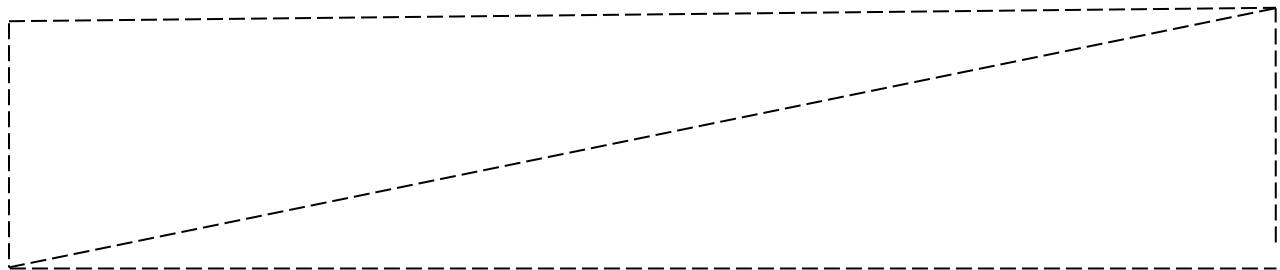
Session #9

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Submitted parts list to our public relations team so they could place our order to the district as well as our order through our booster club fund.	At the Los Altos Academy of Engineering, we are funded a good amount by the district and therefore our robotics team is allocated some of this money. So we have placed one order through them, but that may take a while, so we placed another through our booster fund so it may arrive more quickly and surely for competition
Learned a new type of autonomous code that may open options up in the future	We have always thought about making autonomous programs that can adjust on the fly to what other teams, whether on our alliance or on the opposing, do during that phase of the competition. We are trying to create a simple graphics interface, which will allow us to adjust to other team's plans for the autonomous phase, which can help us best utilize all the points available to us.
Began testing our most critical module (MCM)	We have come to a general consensus on what we want to do just in order to pick up the balls and put them somewhere on our robot. We have decided on a type of spinning tube with zip-ties attached which allows them to move around into a place where we may be able to score from afterward.



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Monday, October 6, 2014: 3 - 6 p.m.

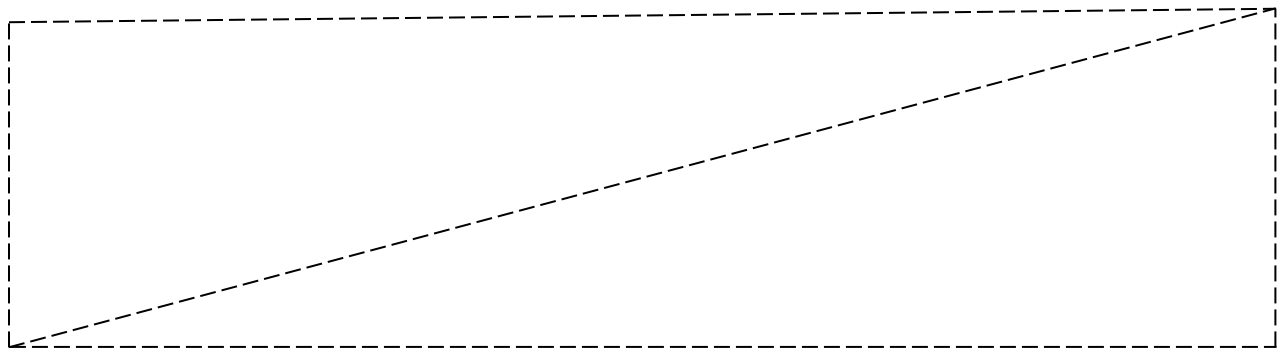
Session #10

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Analyzed the different types of lifts.	We researched a scissor lift, a fork lift, and an elevator lift. We determined that based off the pieces available to us our best option is utilizing the pinion rack in a fork lift type mechanism.
Worked on a mechanism that would bring in the balls.	We used a zip tie scoring mechanism. We used zip ties that were tied onto a Tetrix piece in order to bring in pieces. Multiple zip ties were on the piece and we plan on attaching a motor onto it for it to spin. Thus, the spinning piece will have the zip ties bringing in the balls.
Made a test environment for us to try out our zip tie scoring mechanism.	We used a ball and a box to set up a testing spot for our scoring mechanism. We then attached a drill onto our Tetrix piece and spun it to see if it works. We discovered that we needed longer zip ties for the mechanism to be more efficient.



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Wednesday, October 8, 2014: 3 - 6 p.m.

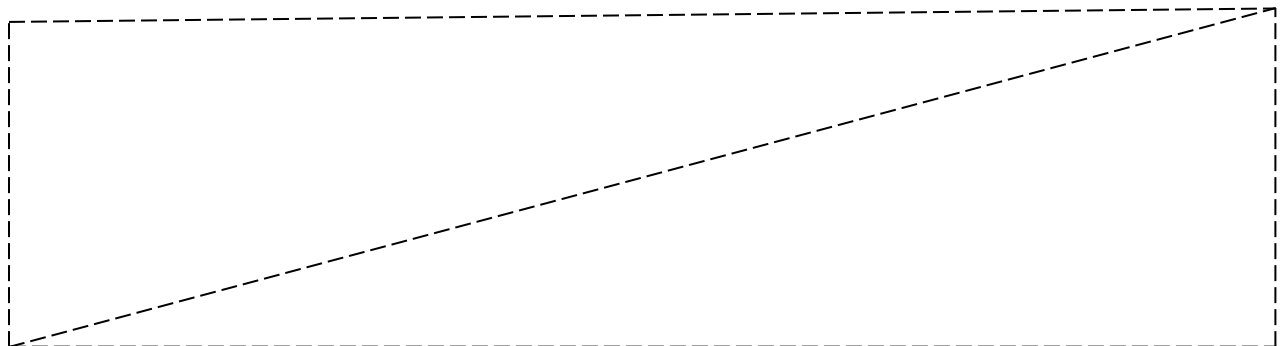
Session #11

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Tested different sized zip ties on the zip tie scoring mechanism. Experimenting with large, medium, and short sized zip ties.	We want to make sure, as a team, that we get the optimal scoring mechanism for a maximum output of points from our robot. We believe it is critical for us to actually compete rather than be carried on the backs of our teammates as we have been before. By knowing which length zip tie to use, we can score the most, and most efficient way our robot will provide.
Continued to work on the pinion rack of the scoring mechanism.	This aspect of our robot is a very critical one, for if we don't have a part that raises our container, we cannot score. So, we easily understand the importance of the pinion slide we are using and want to perfect it to the best of our abilities.
Planned the position of the container.	For the container, we want to know where best to put it. We want the best height off the ground, slope, length, etc. If we figure this out before we place it on the robot and make a mistake, it will save us time and serve to help us.



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Monday, October 13, 2014: 3 - 6 p.m.

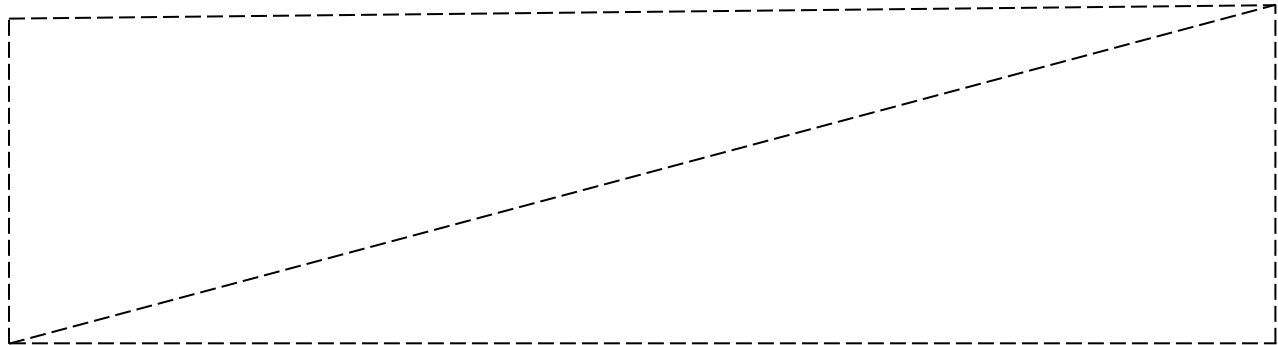
Session #12

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Researched into raw materials and how we could possibly incorporate them into our robot	When looking online, it is very evident that many teams actually look outside of the box that is the Tetrix box. Teams commonly use things such as plastics, sheet metals, and aluminum extrusion in their robot in order to accomplish things which could simply not be accomplished with the Tetrix box alone.
Talked to our composites team in order to learn more about acrylic plexiglass	We want to use this for our main scoring mechanism, but we wanted to learn a little more about the material. It would be much more effective weight wise because of how heavy the metal becomes as you put more and more on a mechanism.
Now that we are completely done with organization, we have split all parts evenly between the two teams, since no new parts have come in and we may not even see them by competition.	Since we are so low on parts, it is easier to just distribute all pieces and then from there we can



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Wednesday, October 15, 2014: 3 - 6 p.m.

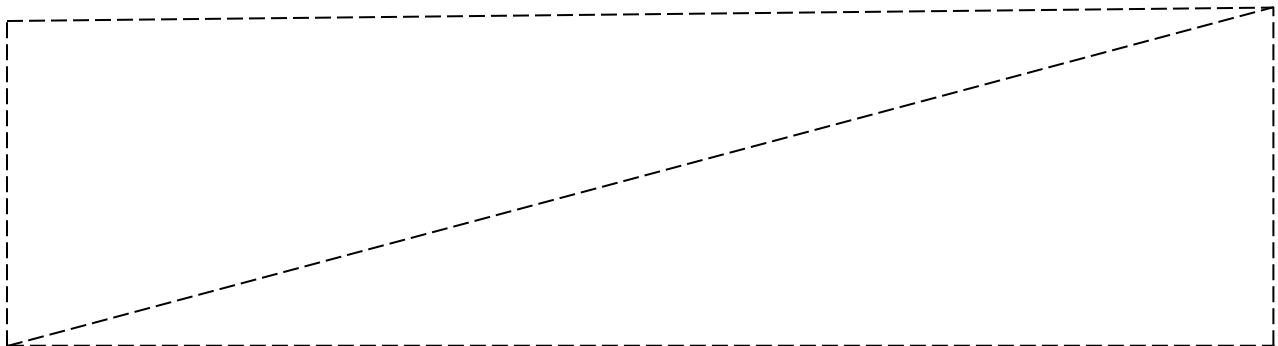
Session #13

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Realized our parts were insufficient.	We discovered that we did not have enough of the most basic pieces. We only possessed two motor, one battery, and one Samantha module.
Ordered parts online.	We went online after we discovered we lacked pieces. We ordered two more motors, as well as two more battery packs.
Brainstormed ideas on how we want the chassis.	We started mapping out how we want our chassis to be made. In addition we also started constructing the ideas. We ended up deciding on a two layer chassis where one layer is below and the layer above is an expanded layer of chassis. This allows us to have more pieces on our robot and it also allows it to be sturdier.



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Friday, October 17, 2014: 12 - 3 p.m.

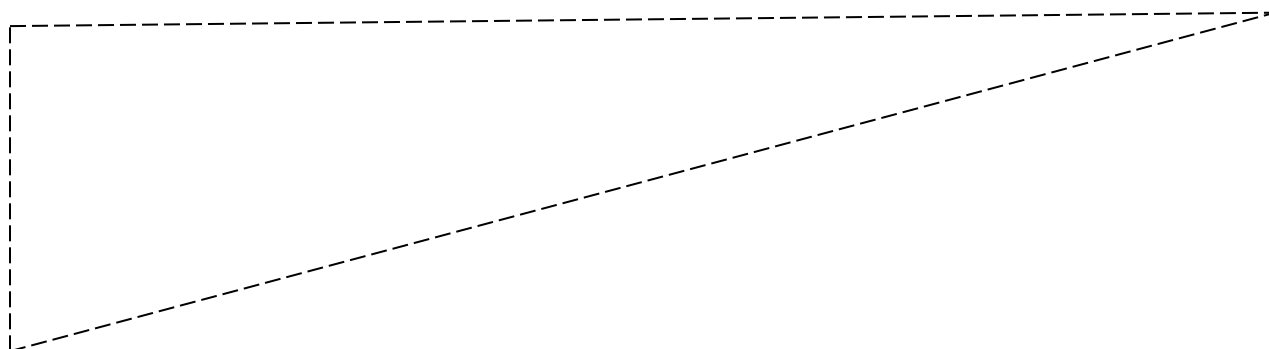
Session #14

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Registered for the forum so we could get the most up to date rulings on the competitions	The forums have a lot of new rulings that possibly could run into trouble with our current design, or could actually inspire us to take on new designs based off of how we are allowed to interact with all of the field elements
Looked into the dimensions of the game field so that way we can have a diagram of it	With this diagram which was made on graph paper, we can find any length at any degree with some math, so that way if we ever need it, maybe for the autonomous stage, then we would be able to do so.
Talked to some of our former team members to see if they have any advice	These members all are off to college, and they always have good ideas. So we decided to get into contact with them and see if they have any tips or ideas that maybe we could take into consideration as they were a big part in making our team what it is today



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Monday, October 20, 2014: 3 - 6 p.m.

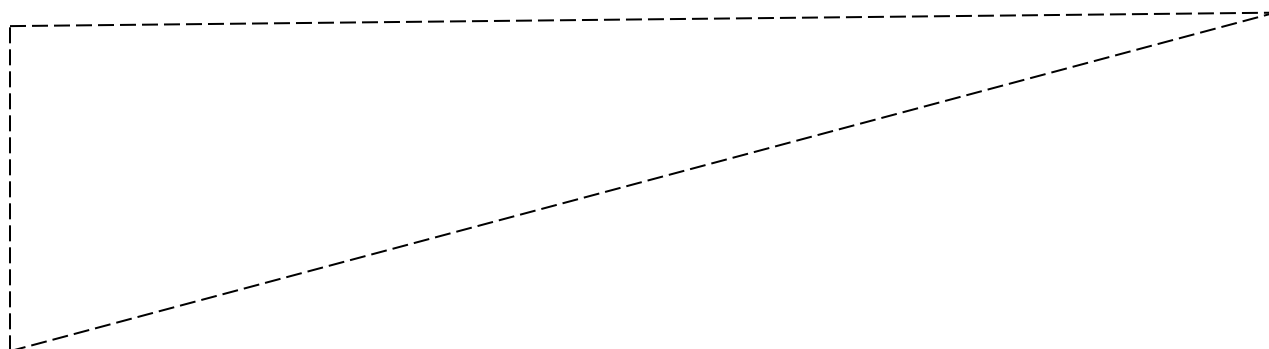
Session #15

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Finished creating the basic skeleton of the chassis	By creating a sound chassis for our robot to be based around, our team believes that the rest of the robot will be a great deal easier to manage. Not only from now until the actual competition, but for in competition modifications as well.
Adjust the wheel placement and finalize the wheel structure	It was a simple fix and the mere act of improving the wheels allows, in our team's general consensus, for a much more efficient robot.
Began looking into the coding/programming process of the competition	Our lead programmer believes that it is in our best interest to begin working on the program as soon and often as possible. We have learned from past failures that last minute coding is not the way to go.



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Wednesday, October 22, 2014: 3 - 6 p.m.

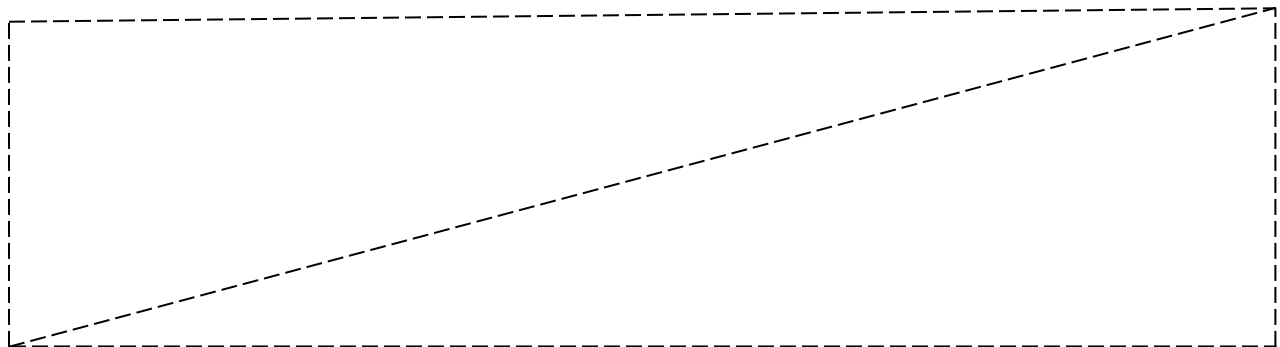
Session #16

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Brainstormed methods on how we wanted to approach the challenge.	We have decided on a very simple autonomous phase as opposed to making one that could prove to be unreliable with the amount of experience which we have with both programming and creating a robot for the autonomous phase.
Worked on adding more support to existing structures on the chassis	We added just a variety of more screws and small pieces in order to better secure the pieces that we combined in order to create the chassis. The main lifting element seems like it was not too sturdy, so this led to overall just securing the components to the chassis as best as possible.
Began researching and looking at sample code online for inspiration	As lead programmer, my knowledge of C is not too vast, but it is considerable. Knowing all basic constructs well, it is just a matter of learning more commands that can prove to be helpful. The current focus on learning currently is arrays, and how they may prove helpful in the autonomous coding of the robot.



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Friday, October 24, 2014: 1 - 3 p.m.

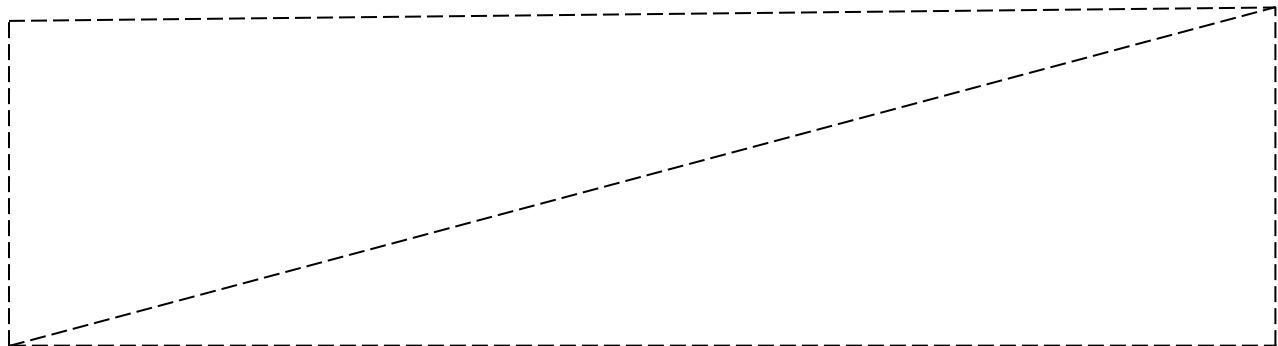
Session #17

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Ordered a Samantha Module.	After discovering we lacked a Samantha module we started researching how to obtain one. We found out that we needed to register before we can get a Samantha Module. Since we barely registered we were able to place an order for one to settle that issue.
Decided where we wanted a pulling goal mechanism.	We first brainstormed where we wanted to put a mechanism that would be able to pull the goals. After discussing with our team we realized the most optimal spot was in the back as there was more space there since we placed our scoring mechanism on the opposite side.
Designed a mechanism to pull the goals.	We decided we wanted a mechanism able to retract and move up and down. Thus, we used a servo that had the ability to move the metal piece up and down and so it wouldn't conflict with the goals when we did not want to pull the goal. The mechanism was attached at the bottom of the chassis and was attached using a servo mount.



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Monday, October 27, 2014: 3 - 6 p.m.

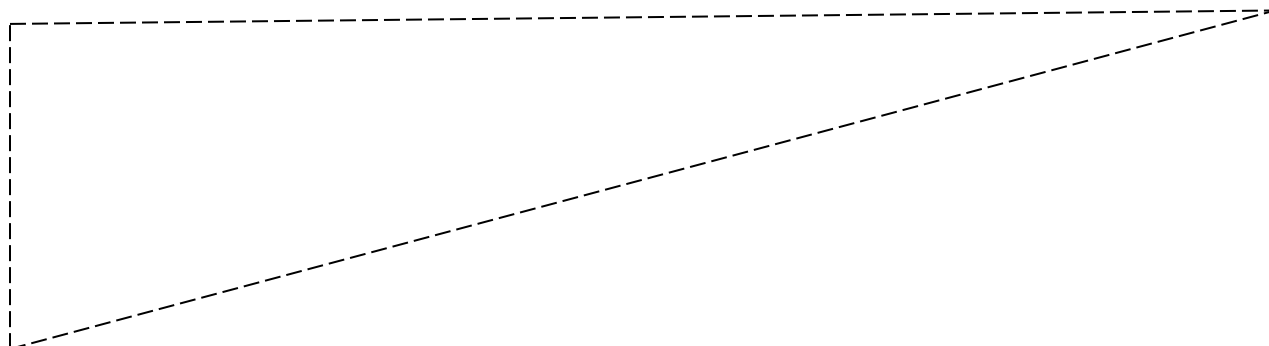
Session #18

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Stabilized the robot by attaching an extra L-shaped connector piece on both of the pinion slides to keep them upright.	The robot at this point had been very different from one side to the next. For example the right pinion slide of the robot was pulled back while the left leaned forward. All in all, the robot was unbalanced. Our team met together to discuss the issue. We jointly decided on methods of leveling it out. This will all simply make driving the robot easier.
Decided on an idea for the container of the ball, and worked to construct the container. This was done with just two Tetrix L-shaped pieces that would soon get a cardboard or plastic bottom to bring the separate pieces together.	Obviously, without a container to hold the balls, we would not be able to score. The advantage we have with the container we built is that it is very slim so that precise release of the balls will be a much easier task in competition
Attached the two separate pieces of the container to the individual pinion slides. As of now there is nothing connecting either the pinion slides or the two container pieces.	By attaching the two pieces, the next time we meet we may possibly finish the container and begin to mount the device to collect the balls. This will give us time to practice, a luxury we have not quite experienced in the past.



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Wednesday, October 29, 2014: 3 - 6 p.m.

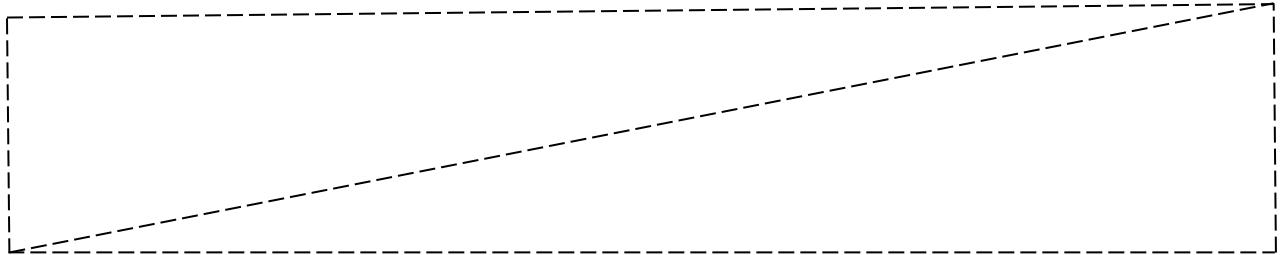
Session #19

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Managed to setup a practice date during which we get to go onto an actual field and practice	At this point, there has not been too much testing of actual use in the field, due to our lack of access to a regulation field, and our inability to even buy the game pieces for simple testing. So, a sister team, if we may, Wilson high school, has purchased one, and invited us for a practice day so we can both get more experience before the actual competition.
Began the agonizing process of learning pointers in C.	Looking online at various types of code used in both real world and robotics scenarios, we discovered the pointer, and are trying to learn as much as possible about their uses. We plan on making a very adapting autonomous program, and with some menu options available, we decided we need to learn pointers to bring our C knowledge even greater.
We decided that a menu may be the best way to go when it comes to autonomous.	We want our robot to be able to adapt to the various scenarios that may come to us during gameplay, whether it be from our opponent, or even from our own alliance. So we think that a menu, with various options based on time or space, can prove to be helpful.



Recorded by:	Date:	Journal Coordinator:	Date:
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Friday, October 31, 2014: 1 - 3 p.m.

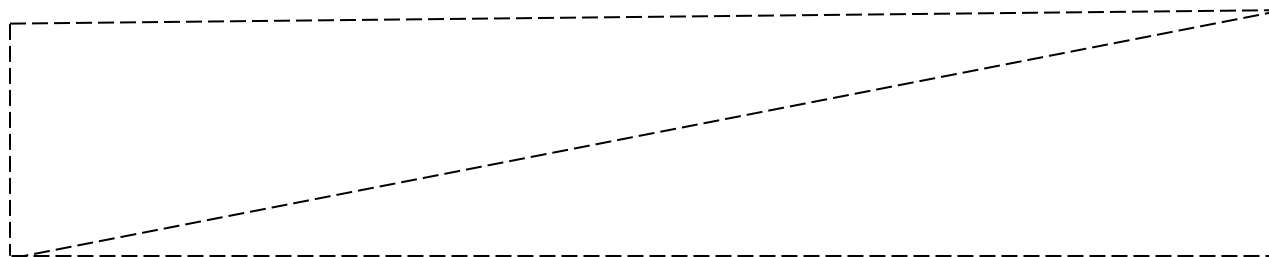
Session #20

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Rescheduled a scrimmage match against a local school.	In order to be successful in the competition, we had set up a scrimmage match against Wilson High School. The match was set for November 8 th ; however it has been postponed to the 22 nd . We want to be able to test our robot and examine flaws of it and be able to fix it for the real competition.
Figured out the issue of finding a spot for the servo controllers and NXT.	Our robot's space was mostly taken up by the mechanism that raised up and collected the balls. Therefore we had to make room to place all the necessary parts such as the NXT, Samantha Module, and Servo Controllers. We ended up attaching a metal beam on the back side of our robot and managed to be able to put the necessities onto the beam.
Continued working on wiring.	Since we had found a spot for pieces such as the NXT and battery we were able to start wiring everything together. It was a struggle at first as since the pieces were so close to each other, we had to try our best to wire it in a way where it wouldn't conflict with other parts and pieces.



Recorded by:	Date:	Journal Coordinator:	Date:

Sunday, November 2, 2014: 10 - 1 p.m.

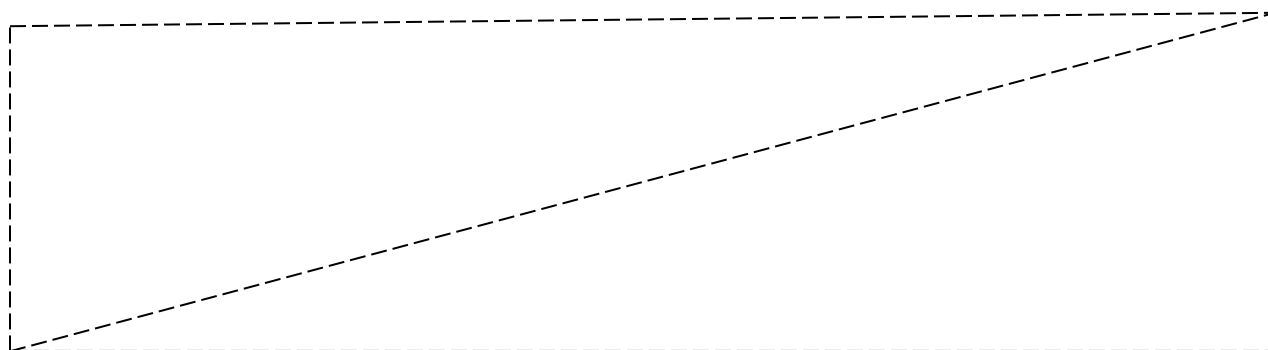
Session #21

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Tested out different materials to serve as a container of the balls. At this point the balls would fly upwards and not be stopped so we tested a two liter bottle of soda, cardboard, and zip ties.	We all agreed that creative ideas were the goal. We wanted to stray away from the easy, and make it fun and complex. While giving our robot a new edge, we simultaneously are installing a necessary piece on our robot to score any points.
We all agreed that creative ideas were the goal. We wanted to stray away from the easy, and make it fun and complex. While giving our robot a new edge, we simultaneously are installing a necessary piece on our robot to score any points.	The idea for side bumpers was a clever one. We think we will be bringing forth an uncommon robot. We also acknowledge the usefulness, as it allows the balls to stay within an enclosed space, making it easier for us to score.
Attached a plastic platform across the bottom of the ball container.	The plastic will serve as support for a ball that is not completely in the container, but is still in our control. We can now lift it up with the container, as it has a platform to rest on.



Recorded by:	Date:	Journal Coordinator:	Date:
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Monday, November 3, 2014: 3 - 6 p.m.

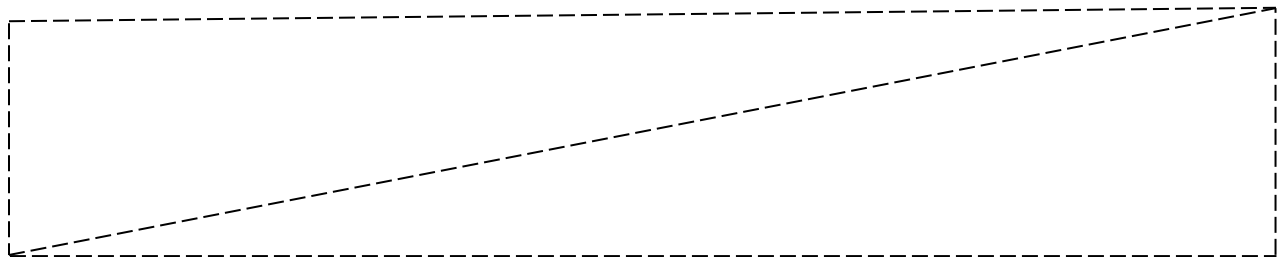
Session #22

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
On this day we managed to attach all the electrical components of the robot onto the chassis	Before this, we had everything on fine however, it was not efficient, the cable management was pretty much nonexistent, and overall it made the robot look unprofessional. So, by actually following through with the plan that we had thought of , we were able to make sure that the robot was easier to deal with when trying to move parts around, as opposed to having to work around a bunch of inconvenient wires
Trying to come up with simpler plans for the programming of the autonomous phase.	We have decided with our limited time and resources, we have no choice but to drastically scale back the difficulty of the autonomous phase programming by sacrificing some of the innovative ideas which we had come up with beforehand.
Finished the programming for the Teleop phase of the competition	This is arguably the simplest phase of the competition programming wise because the controller is doing everything. Since it's all user input, it's easy for the programmer program wise, but obviously the driver just needs to gain more experience over time by practicing driving the robot.



Recorded by:	Date:	Journal Coordinator:	Date:

Friday, November 7, 2014: 1 - 3 p.m.

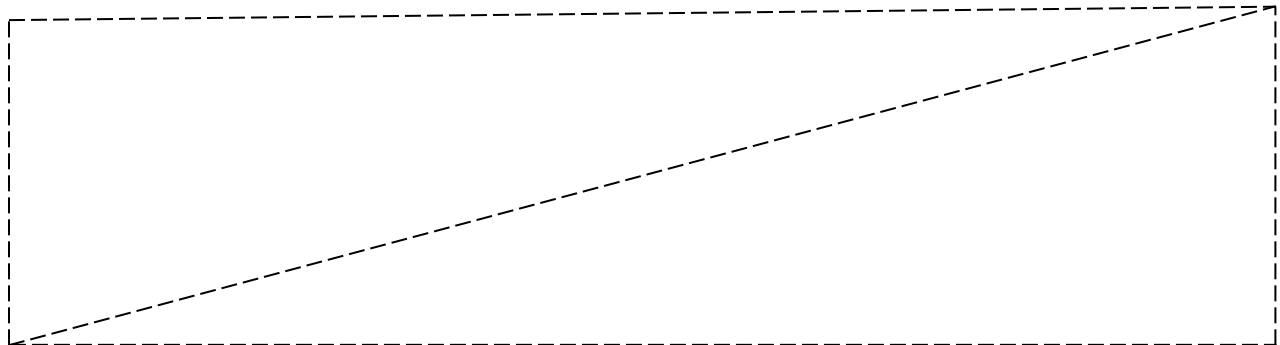
Session #23

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Through the course of building our robot we realized our boxes were highly disorganized.	With the constant moving and using of our boxes that hold our Tetrix pieces, we realized the pieces were once again out of order. Thus, since the scrimmage we planned wasn't for another two weeks, we decided to spend the day reorganizing boxes.
Determined how we wanted to organize the boxes.	We decided to organize our boxes based of type of piece. For instance, we would put all the metal beams in the same box. In addition, wiring and wheels would go together. We classified and organized the boxes based off of the piece's similarity.
Discovered flaws of our robot.	We came to a conclusion that our wiring may have worked, however it was ineffective. The wiring was all bunched up and was not well organized. Therefore we decided to redo the wiring system and come up with a new one. We started brainstorming how we wanted to accomplish that task.



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Friday, November 14, 2014: 1 - 3 p.m.

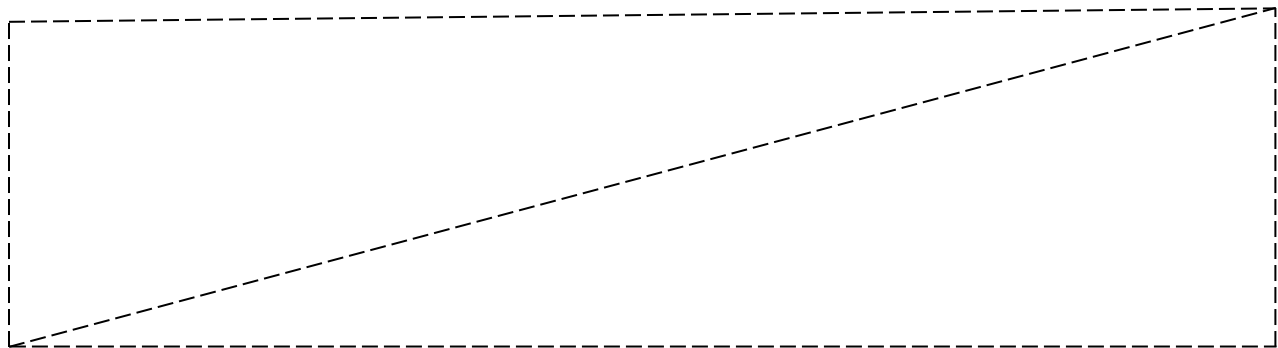
Session #24

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Removed the current ball container on the robot.	The current container was flawed in several ways. Our team decided to try out plexiglass in place of our current Tetrix and cardboard container. We agree it looks nicer and will provide for a more effective and sturdy device. By making it more sturdy, we will be able to score with a lot more precision, giving us an edge in the competition.
Worked more on organizing the wiring of the robot. We created a Tetrix wall to mount the motor and servo controllers. We also mounted the Samantha module here.	This set up for the wiring of the robot is a vast improvement from our first system of wiring. Wires used to get caught in the gears, but now the wiring is relatively neat and easily accessible.
Brainstormed ideas for the plexiglass container and began to make measurements to cut the plexiglass.	By creating a precise and stable measurement for the plexiglass, we will be able to create a stable container for precise scoring. This care we are taking in the planning will help us be much more effective in the actual execution.



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Monday, November 17, 2014: 1 - 6 p.m.

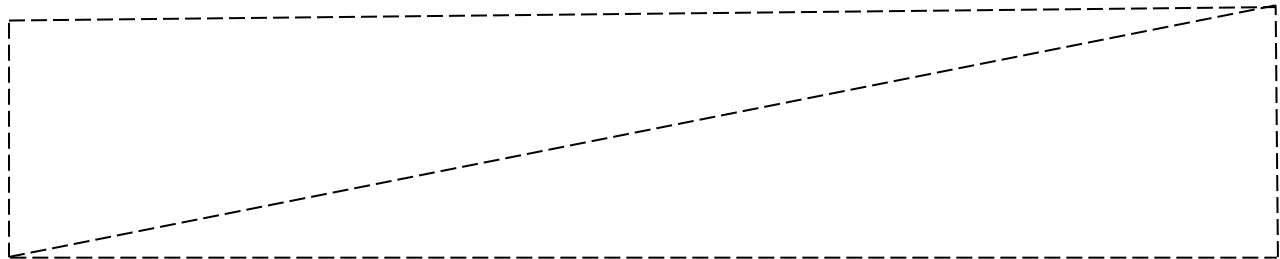
Session #25

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Our pinion slide lift mechanism was not symmetrical. One side of the lift was higher than the other.	In order to fix this flaw and improve the precision of our robot, we decided to reassemble and rebuild it. During the process of rebuilding we tried our best to make sure they were leveled.
We finished the robot and proceeded to test its performance by attempting to gather wiffle balls	We noticed a huge flaw in our mechanism. The mechanism holding the ball is slanted and attached onto our pinion slide. However, the slope was too steep therefore causing only 2 or 3 balls to be the maximum carried by our mechanism when we desired 4 balls. Thus, we needed to find a solution to this problem.
Brainstormed ideas to fix the wiffle ball mechanism.	The team tried coming up with different idea such as reducing the slope by having the bottom portion of the slope flat, but that proved unsuccessful. We also tried lowering the pinion slide so the slope of the box holding the balls would also decrease, however this too was not effective. We ultimately ended up trying to replace the metal built mechanism with plexiglass for a lighter and more flexible build.



Recorded by:	Date:	Journal Coordinator:	Date:

Monday, November 24, 2014: 3 - 6 p.m.

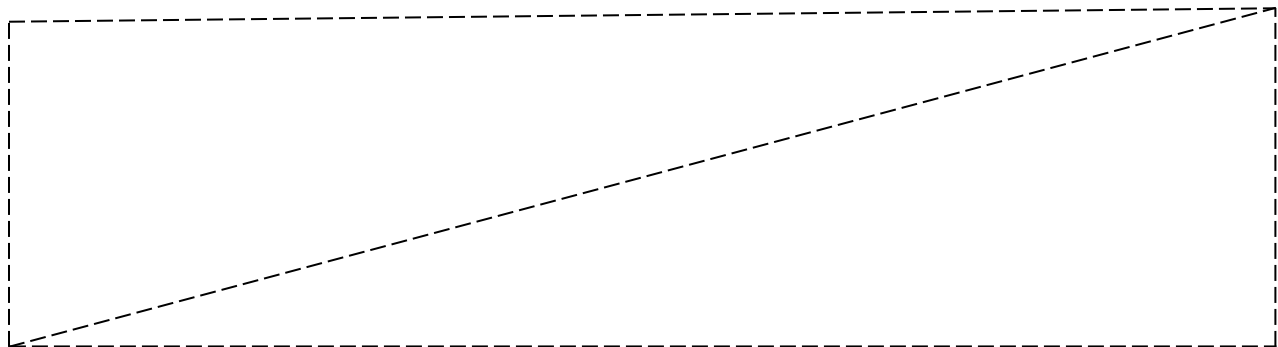
Session #26

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Bought more Plexiglas	We acquired some Plexiglas and started thinking of ideas of how to attach that onto the robot. We decided to drill holes onto the side of the Plexiglas in order to mount the Plexiglas onto the robot.
Analyzed and discussed pros and cons of using Plexiglas	The team took some time to analyze whether the use of Plexiglas was a wise choice. The positive aspects of Plexiglas included being lighter, and more aesthetically appealing. On the negative aspect we would have to manually drill holes into it. Ultimately, we agreed the use of Plexiglas was a better choice than using aluminum.
Plexiglas cracked during the drilling of the holes.	The Plexiglas cracking while we were drilling holes into it. We needed to come up with an alternative plan. We decided to buy another Plexiglas and give it another shot. The team also developed a backup plan in the case that it didn't work. We created a backup metal mechanism in case the Plexiglas broke again.



Recorded by:	Date:	Journal Coordinator:	Date:

Wednesday, November 26, 2014: 3 - 6 p.m.

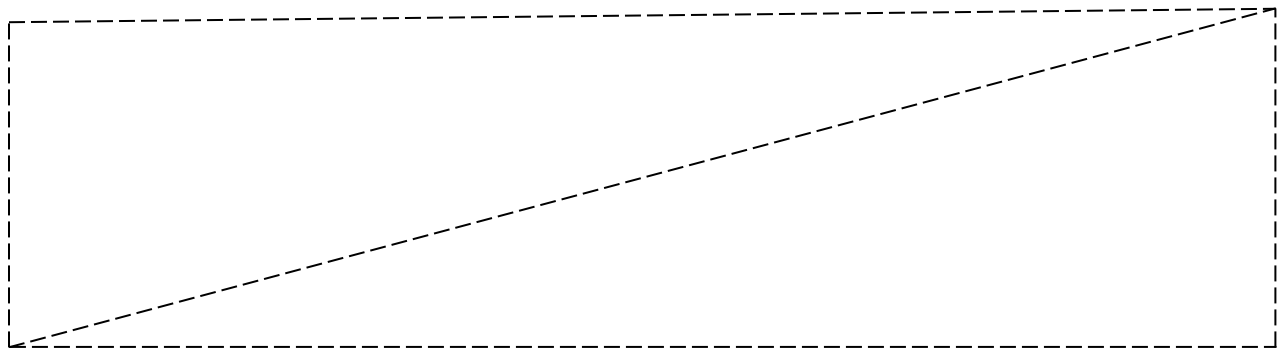
Session #27

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Created a checklist for the day of competition	This is a list of things we must do when we are setting up our table so that way on the day of, we aren't trying to find different things in different boxes or found out we forgot to do something important, so this will help.
Created a checklist for before competition	These are things we need to get done before we even get in the van on the way to the competition. Things like putting together the journal, knowing how our robot operates, these things we must figure out before we even get there
Created a list for scouting	One of the things we have learned as a team is that the social aspect of the game is just as important, if not even more important than the actual point values scored in each match..



Recorded by:	Date:	Journal Coordinator:	Date:
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Wednesday, December 3, 2014: 3 - 6 p.m.

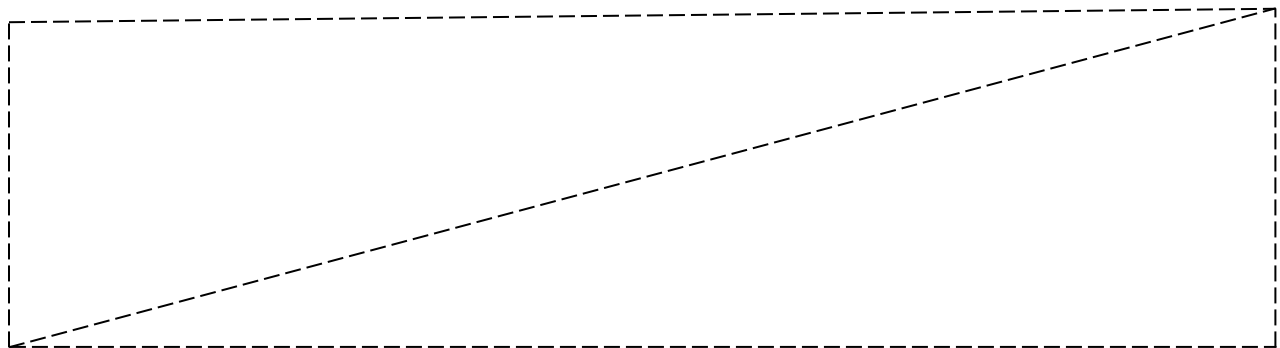
Session #28

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Looked online to see what other teams are doing	It's fun to be able to see and then maybe predict other teams' takes on the competition and their logic going forward into competing. Not everyone thinks alike, everyone has their own thoughts, and who knows how all those thoughts will come together on one day
Decided we would go conqueror crazy	At our school, we are the Los Altos Conquerors, and we decided that in typical conqueror fashion, we would go conqueror crazy to show how much we love our school and how appreciative we are of the support it gives us
Did a little publicity	We talked to our newspaper as they wanted to talk to us about we were doing in this robotics season. It's always good to see support from our school and hopefully this can lead to even more people who want to participate in FTC in the coming years.



Recorded by:	Date:	Journal Coordinator:	Date:
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Friday, December 5, 2014: 12 - 3 p.m.

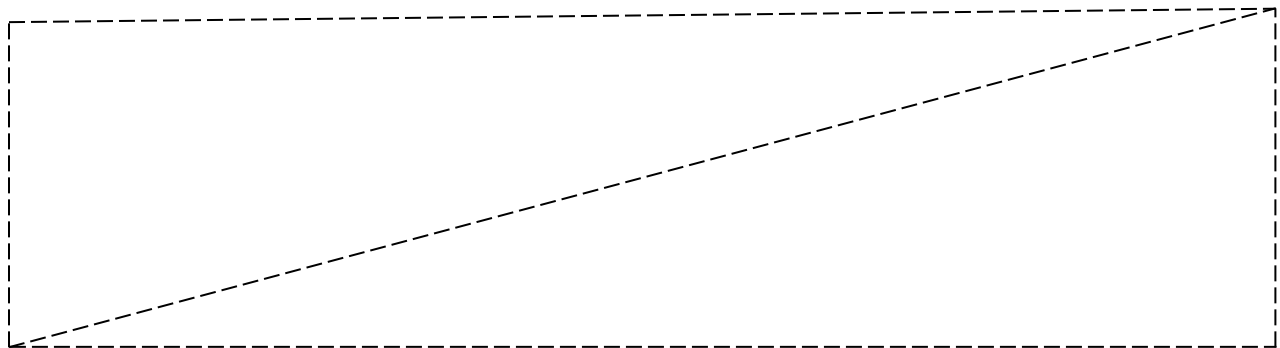
Session #29

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Packed everything away	We need to be ready, so we went through our checklist as we take everything home. This is it, there is no going back to our school to grab more pieces, so we need to make sure that we have everything we could even possibly need on competition day
Looked at new parts	With our luck, the majority of our new parts came on the Friday right before competition, so we just unpacked them and will be bringing them with us anyway as if we need any new parts to replace old parts it is comforting to know that we have them available.
Relaxed	We have done a lot, so it feels good to actually be able to just relax for once while just knowing that we have worked our hardest and done our best to get a robot ready for the competition, and at this point, what's done is done.



Recorded by:	Date:	Journal Coordinator:	Date:
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Saturday, December 31, 2014: 1 - 5 p.m.

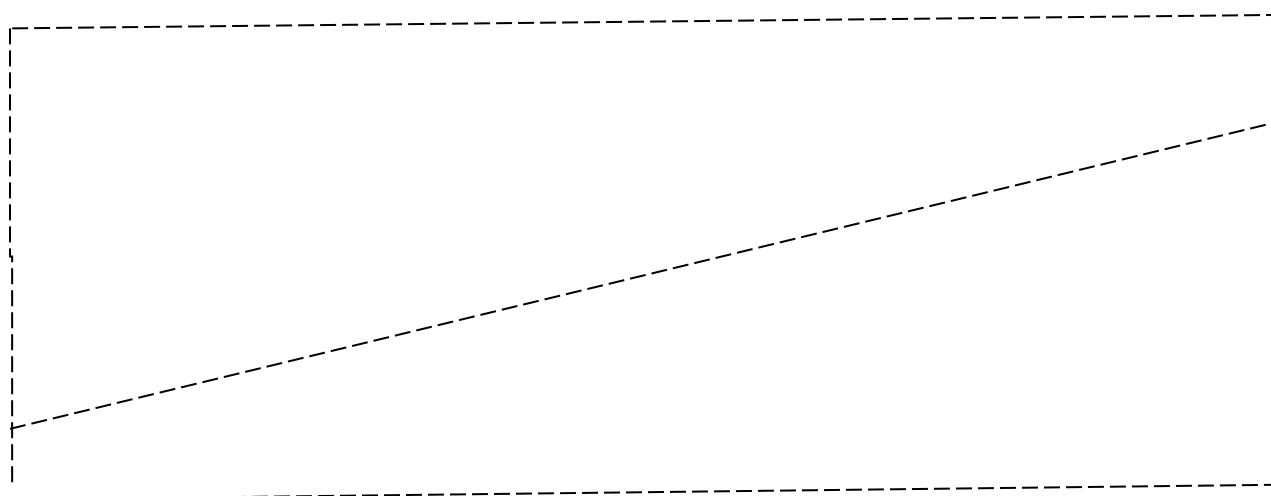
Session #30

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Brainstormed a new approach to our second qualifying competition.	In our first qualifier, we got to the “play-offs” if that is what they are called. We saw the ups of our robot, just as well as we saw the downs. With this competition, we want to take what we did best and improve that, while removing the poor aspects of our robots for better ideas we have seen and come up with. Having prior experience might give our team the edge we need for our upcoming competition.
Dismantled the robot for our new design. We had a two Tetrix piece on each side design using pinion racks to reach the 30 container, but we are widening the robot for three pieces on each side so that we can reach 60.	By widening our robot, we will be able to reach a higher level goal and scoring consistently in that container rather than the lower will give us a higher score. WE also moved the pinion mechanism further up so that we can have more space in the back for the wiring.



Recorded by: Michael Attanasio	Date: 12/31/2014	Journal Coordinator: Andrew Rojas	Date: 12/31/2014
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Monday, January 5, 2015: 1 - 6 p.m.

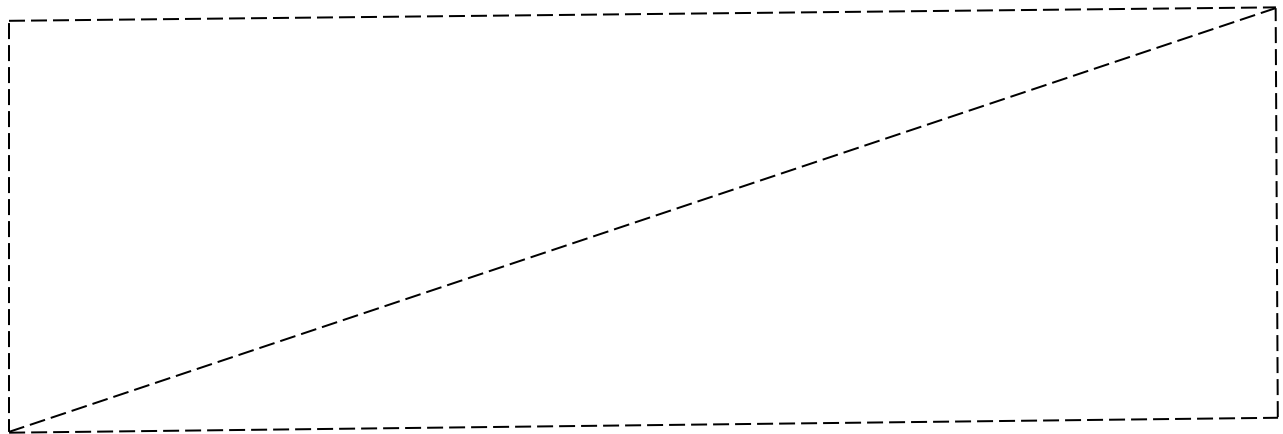
Session #31

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Conducted a reality check of what was in the realm of possibility.	Our design of widening the robot and trying to increase its scoring ability to 60cm was very troublesome. The team had trouble figuring out a way to do this. With the time constraints we had to be realistic and change our strategy.
Brainstormed new strategies.	Due to the competition approaching within two weeks, we decided we wanted to be realistic with our goals and plans. The team agreed on excelling on one aspect, rather than focusing on the entire robot.
Discussed possible building designs.	We decided we wanted to focus all of our robot's design around pushing and pulling the goals. The aim of the design is to allow our robot to have the capability to pulling and pushing on both sides. Not only will our robot be more compact due to only needing to accomplish one task, but it allows us to put all of our focus into it.



Recorded by: Eric Liu	Date: 1/5/2015	Journal Coordinator: Michael Attanasio	Date: 1/5/2015
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Wednesday, January 7, 2015: 1 - 6 p.m.

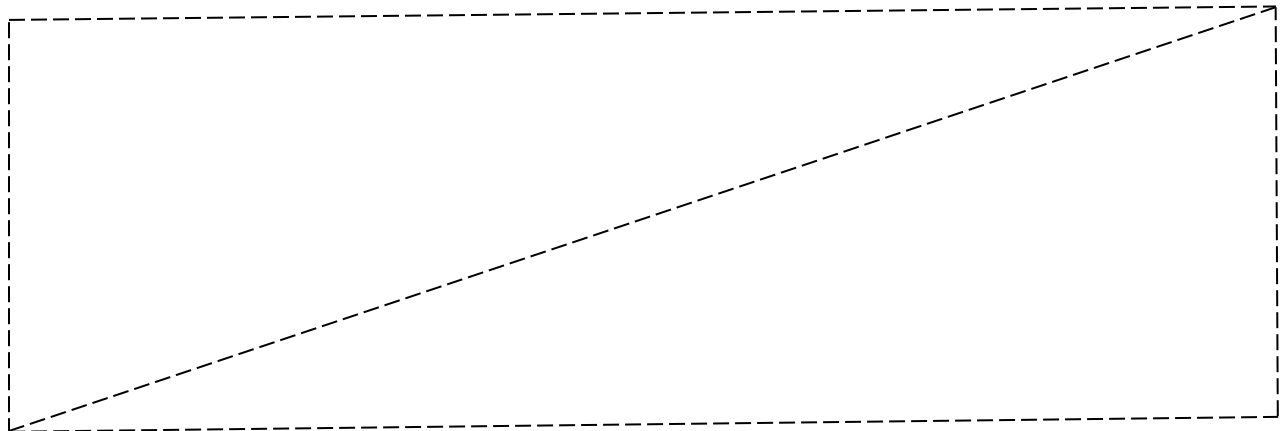
Session #32

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Agreed on the foundations of our new design.	We agreed we wanted a big chassis, oriented around pushing goals, and possess the ability to knock down the kickstand. Reached a consensus that we wanted to have a bar hanging over our robot and that would be designed specifically to knock down the kickstand.
Started building our new design.	Started constructing our design. We started with building the chassis, then moved onto building servos with a piece attached that would allow us to hook onto the goal. We wanted to have 2 servos on both sides of the robot so we can grab onto the goal pieces.
Reached a consensus on the type of drive we wanted.	With experience from the last qualifier, we were comfortable with using the same drive as before. Thus, we kept the front wheel drive with two Omni-wheels in the back. However, instead of having one Omni-wheel on each side, we attached another one, making it two Omni-wheels per side.



Recorded by: Michael Attanasio	Date: 1/7/2015	Journal Coordinator: Andrew Rojas	Date: 1/7/2015
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Wednesday, January 14, 2015: 1 - 6 p.m.

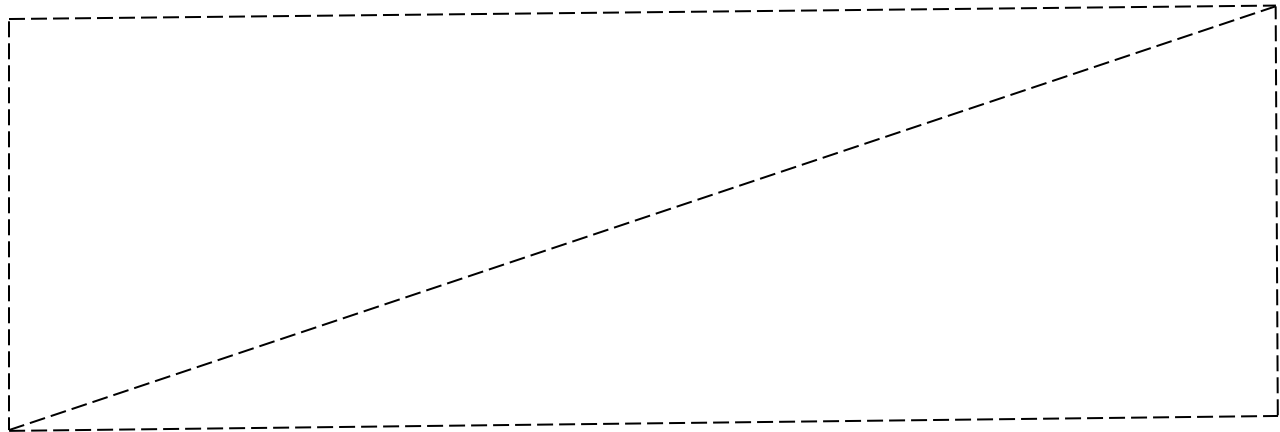
Session #33

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Mounted a sonar sensor as we will attempt the autonomous period.	We will use the sonar sensor in order to detect the location of the goals to be able to transfer them to the parking spaces during the autonomous period.
Began and finished wiring of the robot.	Using a sheet of aluminum and drilling holes into it, we were able to have organized wiring. We mounted motor controllers, NXT, Samantha module, and the Tetrax battery all on the aluminum plate so we would have wiring that wouldn't get tangled.
Completed our robot and packed up for the competition.	After working diligently to finish our robot, we had to begin packing to make sure we don't forget anything crucial for the competition. We created a check list in order to make sure everything we needed will be taken with us to the competition.



Recorded by: Andrew Rojas	Date: 1/14/2015	Journal Coordinator: Eric Liu	Date: 1/14/2015
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Sunday, January 18, 2015: 1 - 4 p.m.

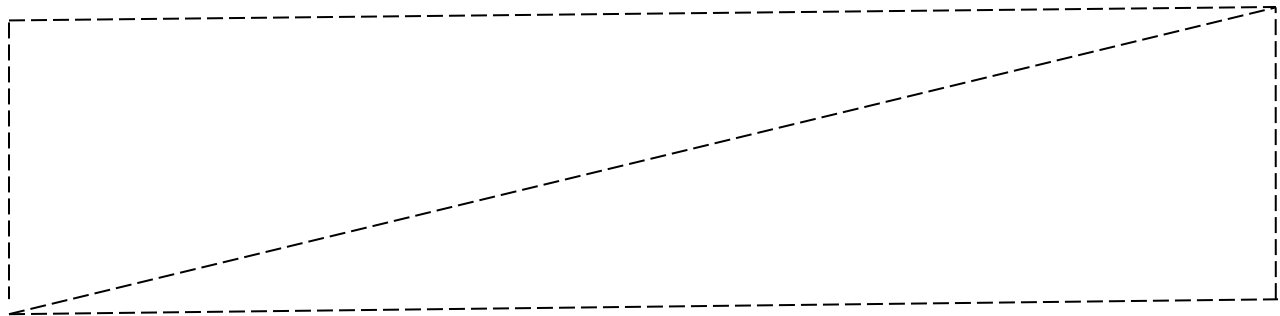
Session #34

Attendance: Michael Attanasio, Eric Liu, Andrew Rojas

Engineering class at Los Altos High School

(Hacienda Heights, California)

Task	Reflection
Drilled holes in the plexiglass and attached it with zip ties to the robot	By having a piece of plexiglass on our robot, it gives our team the capability to push and pull at the same time rather than one or the other. We can pull one pole from the back and push one from the front allowing us to move much quicker than one at a time. This will give us a better chance for extra time to defend and a good end game strategy.
Worked on the final programming of the robot.	With a new robot designed for as completely different purpose than our first robot, our lead programmer has to devise an almost entirely new program for our program to function. We are also adding an autonomous feature which may help us score more points in the autonomous period if the program is successful.
Tested the tele-op functions of our robot, primarily the capability to push and pull a makeshift container.	With prior testing, our team will have prior knowledge of what we need to do in terms of driving for the competition tomorrow. Hopefully, by knowing capable errors beforehand, it will help to decrease actual errors at the competition, making us much more efficient.



Recorded by: Eric Liu	Date: 1/18/2015	Journal Coordinator: Michael Attanasio	Date: 1/18/2015
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FTC Engineering Notebook

Team #9562

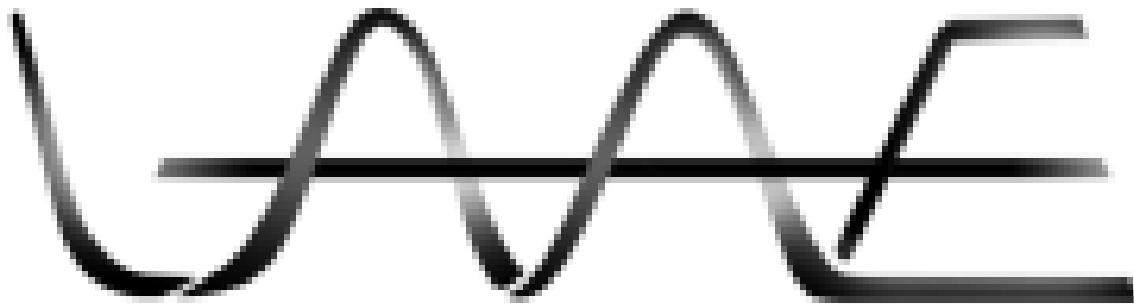
2014-2015

By: Calvin Hsieh, Jason Kwan, Isaiah Sotelo, Jacky Zhang



Highlights and Summary

Competing in FTC has been quite a challenge. Although we were an amalgamation of “newbie” team members, we stood strong with our passion for robotics and took on the challenge with great effort. Due to the lack of experience, even in knowing what an Allen key was, we would have to build deconstruct and rebuild over and over again. We faced many difficulties such as miscommunication, lack of attendance, and division in leadership. One part of the team was made up of sophomores, and the other part seniors who would work on the robot at separate intervals. In addition, there were few avenues for the members to communicate their progress to each other and therefore lead to much wasted time. However, during the times where we were able to be together, we worked vigorously at hopes of making a great leap of progress. We first brainstormed ideas of accurately scoring the balls and thought an elevator-like would be the best. Then we broke down the basic robot components and assigned those functions to each member. Calvin Hsieh took on the Frame; Jason Kwan took on the wheels and motors; and Isaiah Sotelo took on the elevator with Jacky Zhang. Jacky Zhang, the lead builder and designer, debated and communicated with each member who was responsible for each component. After we all reached a consensus in design, we went on building our robot. Later on, as we reached to a point of adding the wiring and NXT components, our sophomore members, Isaiah Sotelo and Jason Kwan, independently researched proper wiring to ensure safety and function. Lastly, Calvin Hsieh, our lead programmer, began programming the joystick controls and autonomous functions of the robot. After calibrating and adjust the program and the robot, our driver Calvin Hsieh practiced driving and getting used to the joystick controls. On December 6, 2014, we packed our things and prepare our minds for the competition. We did all we could with our busy schedules and lack of experience. However, this being the last and, actually, only year for our seniors, we went all out and hope that we see the fruit of our labor. But even if we do not get to championships, we had fun collaborating together and that is really the point of FTC.



Los Altos Academy of Engineering Robotics Team #2

Jacky Zhang is currently a twelfth grader and attending Los Altos High School. He will be graduating next year in 2015. He is enrolled in various Advance Placement classes to challenge his mental abilities, experience a deeper level of learning and testing his personal responsibility. He is also involved in the swim team and other clubs.

- My hair is teal (it faded to green).
- 6'1" and still growing.
- Both parents are not college graduates.
- Has an older sister.
- Speaks three languages (English, Mandarin, and Cantonese).
- Wants to major in Computer Science.
- Has experience coding in C++, JavaScript, and HTML 5 & CSS.
- Hopes to go to Harvey Mudd when he graduates.
- Knows how to play the guitar.
- Has some experience in creating mods for games, namely Minecraft.
- Maintains school's Key Club website.
- Amateur photo editor

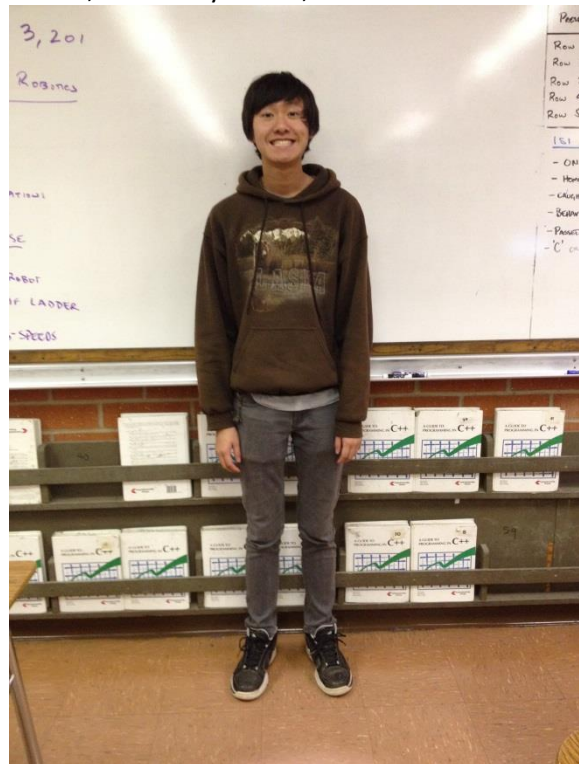
"I joined the FTC team because I love collaborating with others that have a passion for making robots. I cannot wait to see my creations come to life."



Calvin Hsieh is currently a 12th grader attending Los Altos High School. His GPA has never dropped below a 4.0. Additionally, he is involved in many extracurricular activities and clubs. He is involved in tennis, Ecology Club, Book Club, Science Olympiad, Engineering, and Promoting Animal Welfare.

- Has 1 older brother.
- Enjoys reading creepypasta stories.
- Favorite food is spaghetti.
- Been to Japan, Taiwan, Nevada, Arizona, Washington, and Alaska.
- Interested in majoring in computer science.
- Also can speak Chinese and Taiwanese.
- Favorite show is Kamen Rider.
- Co-president of Promoting Animal Welfare.
- Enjoys playing online games with friends.
- Does not believe in paying for online multiplayer games.
- Is a dog person specifically.
- Plays Sudoku.
- Does not like to shop.
- Wants to learn how to cook.

"I joined the FTC team because I really wanted to learn how to program and build robots when I saw a friend, who is my senior, demo his robot to me."



Jason Kwan is currently a 10th grader attending Los Altos High School. He currently has a 4.67 GPA and has never had a grade of a “B” or less in his entire high school career. Also he is currently involved in a multitude of extracurricular activities such as tennis, Key Club, Eco Club, Science Olympiad, and Future Business Leaders of America.

- Has 2 older brothers
- Ranked 8th out of his entire sophomore class
- Loves science
- Wants to attend MIT
- Loves to play computer games
- Loves board games
- Has been to Arizona, Nevada, New York, Washington D.C, China, Nevada
- Youngest person out of his entire sophomore class
- Favorite food is ramen
- Favorite dog breed is Husky
- Favorite number is 7

“I joined the FTC team because ever since I was a kid I have really enjoyed building objects. Also I found the engineering field fascinating and so I joined the engineering program at my school. I then found out about the FTC event that the team was currently working on and then I immediately knew I was going to join the team for it would allow my childhood hobby of building.



Isaiah Sotelo attends Los Altos High School and is currently a 10th grader. He is taking all the Honors and AP classes that are available to him in order to challenge and prepare him for the future. He is also a part of three separate clubs, all of which reflect his main interests. From this he is able to meet new people in a friendly environment, all while gaining new knowledge and skills that will help him outside of his academics.

- Clubs: Engineering, Conquers for UC, and CSF Honors Society
- Enjoys all subjects but has a special interest in all types of mathematics
- Loves practicing and playing guitar
- Wants to learn Piano
- Consumes large amounts of sugar (Candy, Soda, etc...)
- Hangs out with friends almost everyday
- Has one 22 year old sister
- Is very close to his whole family (Cousins, Uncles, Aunts, Grandparents)
- Wants to be fluent in at least 4 languages by end of college (Spanish, Mandarin, Italian, and German
- Loves watching entire TV series
- Favorite type of food is Italian
- Spends some time longboarding with friends
- Classic Rock is his go-to choice for music
- Loves The Beatles, The Rolling Stones, Led Zeppelin, and The Who
- Plans on majoring in Architecture, Electrical Engineering, or Computer Engineering (Most likely Architecture)
- Goal is to go to Columbia University

"I am a part of the FTC team because it gives me the ability to refine and practice my robotic skills by competing with other people "



3:00p.m.-6:00p.m., Monday, 15th September 2014

Session #1: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Sotelo, Jacky Zhang, Jason Kwan

Activities:

- Watch the example video for the new game
 - This new game is unexpected and can prove quite a challenge to tackle. This game is more cooperative and more team orientated.
- Read the rule book together as a team
 - There are some things that were missing from the video that is explained in the rule book. It clarified many things such as how points are earned and what restrictions are in place for the robot.
- Converse and brain storm ideas that would allow the team to be able to transport the ball.
 - As a team, we needed to stay organized and work together rather than working on our own It is important to focus this because design and concept seems to be the most challenging obstacle so far due to the very unexpected game that is presented to us.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00 p.m. – 6:00 p.m. Wednesday, 17th September, 2014

Session #2: Engineering class at Los Altos High School (Hacienda Heights, California)

Attendance: Calvin Hsieh, Jason Kwan, Isaiah Sotelo, Jacky Zhang

Activities:

- We had to sort and organize the boxes that housed the parts from previous events.
 - Sorting and organizing the boxes was relatively easy but it will prove valuable in the future for it improves efficiency and reduces chaos.
- We started to order parts for the completion.
 - We were able to take inventory very efficiently since we had organized the items previously and by doing so we were able to figure out what items we needed very quickly and started ordering them.
- Next, we then decided to start to make a sample robot.
 - We got instructions from USFIRST.org for the robot and we began construction so that we would be able to get used to how to use the TETRIX pieces for future competitions.
- We completed the practice robot.
 - Learning how to work with TETRIX pieces allowed us to learn the ins and outs of most of the pieces. By learning the pieces, we could be familiar with their limitations and focus on coming up with a better, functioning robot.

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00 p.m. - 6:00 p.m. Friday, 19th September, 2014

Session #3: Engineering class at Los Altos High School (Hacienda Heights, California)

Attendance: Calvin Hsieh, Jason Kwan, Isaiah Sotelo, Jacky Zhang

Activities:

- We practiced programming.
 - So all of us could learn better we all had practice assignments to improve our skills. We had blank commands and we filled them in.
- More brainstorming
 - Our group decided which ideas worked and didn't and we built or improved our ideas from the earlier sessions.
- Continued working on robot assembly
 - We then spent the rest of the class building our robot. Two people would gather the pieces while the other two worked on assembly. After a small portion was done the two would switch places.
- We deconstructed the practice robot.
 - We disassembled the practice robot because it was purely for familiarity purposes. Now that we have gotten most of the functions familiarized, we deconstructed to return the parts we expended during the build.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00 p.m. – 6:00 p.m. Monday, 22nd September, 2014

Session #4: Engineering class at Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Jason Kwan, Isaiah Sotelo, Jacky Zhang

Activities:

- We then reorganized the pieces.
 - We reorganized the deconstructed pieces back to their base components. Organizing our parts will give us familiarity and the ability to instantaneously know if we're missing a piece that we'll have to order or to 3D print.
- We brainstormed our competition robot.
 - We attempted to brainstorm our competition robot. Every idea we threw in had major faults in it and we had to scrap the ideas.
- We reviewed the rules for the competition.
 - We consulted our binder with FTC competition rules. We went over and read through the rules as a group to clarify questions we have and to ensure everyone will read them
- Began preparing equipment and supplies
 - What takes up the most time when competing in robotics competitions is actually the building of the robot. Preparing things ahead of time such as assembling tank treads cuts down on a lot of construction time and leaves more room for equally important tasks such as the writing the code.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m.-6:00p.m. Wednesday, 24th September 2014

Session #5: Engineering class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Sotelo, Jacky Zhang, Jason Kwan.

Activities:

- Brainstorming ideas for a uniform journal template
 - Another way to earn point in the competition is through the journal. The journal is an important part and organization is crucial aspect that will allow our team to earn those points. A template would allow us to keep the journal uniform and organized.
- Started to construct prototype robots
 - After we had brainstormed the ideas for the robot, we started to make aspects of those different ideas and see which one of those aspects is the best and will be implemented in the final robot.
- Went over the penalties from the rulebook to see if our ideas would cause them
 - Some of over ideas were controversial and so we went to the rulebook to see if those certain ideas would work so that in the competition, we wouldn't be heavily penalized.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Friday, 26th September, 2014

Session #6: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- Made a to-do list of things needed to be done to the robot.
 - After starting to make the robot, we decided to make a to-do list in order to better organize future plans rather than try to memorize what we will need to be done and then possibly forget the idea later.
- We researched ideas for FTC
 - To start our robot we researched previous FTC robots. Then we would figure out how certain “contraptions” from each robot functioned. Lastly, we made any adjustments we thought necessary and then we tried to find out ways to incorporate these into our own robot.
- We tested a new mechanism
 - We had an idea of a part but first we decided that we would test it out first. So we gathered some pieces and made a quick version of our idea. We then tested it by hand to see if it functioned properly, which it did.

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Monday, 29th November, 2014

Session #7: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- Continued working on our robot
 - After, we continued robot assembly by first thinking out loud any ideas each of us had. Then we split up into two people, with each pair working on a different part of the robot.
- We came up with a strategy
 - We brainstormed and established a strategy to try and base our robot's design on. We decided that a good approach is to have a tray connected with two elevator slides to transport the balls to the containers.
- We constructed a test elevator slide.
 - We built a test elevator slide to figure out how it works and to see if we can change the design to be more efficient. This also allowed us to test the height we can reach to for the competition.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Thursday, 2th October, 2014

Session #8: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- We mapped out some schematics for the robot.
 - We used a dry erase board to draw out our schematics for the robot. By doing so, it allows us to see the parts and pieces we want to use and to modify it to fit into the 18 inch cube restriction.
- We placed orders for more parts.
 - We realized that with new parts, we would still short on major necessities. Therefore we placed more orders for things we need such as motors, batteries, servo motors, and motor and axle hubs.
- We were debating between a four wheel-drive and a two wheel-drive robot.
 - One important aspect of the robot is mobility, and our team wanted something very mobile. However, when we took inventory of what we have, we found that there was going to be a lack of motors. So we decided to design a robot that has a two wheel-drive. This will decrease weight, increase space, and give backup motors in case any burn out.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:52 p.m. - 2:35 p.m., Friday, 3rd October 2014

Session #9: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- We start working on a functioning chassis design.
 - Given the restrictions to the chassis, eighteen inches by eighteen inches, we required a chassis that would be able to store what we needed, yet not go beyond the limits. However, we didn't want to truncate the preset metal piece because that would possibly take too much time for the building process.
- We started to work on the mechanism to collect the balls
 - We wanted to use something that was light and effective enough to use for the mechanism to collect the balls. We researched and found out that zip ties were surprisingly effective, cheap, and very light. So we used them as part of the mechanism.
- We continued to work at the elevator slide
 - We figured out how to build the elevator itself and then we started to think about how to have the elevator move up and down in order to reach the height of the various ball collectors.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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2:35 p.m. – 6:00 p.m., Monday, 6th October 2014

Session #10: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Sotelo, Jacky Zhang, Jason Kwan.

Activities:

- We learned how to do wiring
 - Being a team of mostly low experience in TETRIX , we started to learn how to do wiring because after everything is in place, we need to know how to place the correct wires in their correct place so that every functional aspect of the robot will be able to work
- We talked with the classroom instructor
 - Each team spoke the instructor individually and we explained to him our ideas for the robot and how our progress was. Then he spoke to us as a whole about some possible ideas for the competition.
- We continued working on our robot.
 - We have a basic build for our chassis but it still need a little work. We kept fine tuning it and making small adjustments here and there.

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Wednesday, 8th October, 2014

Session #11: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- Practiced our wiring
 - We already researched some of the basics for wiring but to improve our skills even more we set up some test models. We plugged in all the wires the same way it would be in the robot by using a diagram of the wire setup.
- We connected two halves of the chassis that was assembled.
 - We connected two halves of the chassis together to provide a design that worked with our ideas. The connection is worrisome though because the connection is not the sturdiest design and an issue is if it can support all of the essentials for running a robot and hold our scoring mechanism. Along with this, we do not know how to incorporate and wire around some of our mechanisms without restricting the functionality.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:52 p.m. - 2:35 p.m., Friday, 10th October 2014

Session #12: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- We have major communication issues.
 - Although we are given time afterschool, up to 3 hours of work, the time is only restricted to Mondays and Wednesdays. We only have time to work on robots during Mondays, Wednesdays, and Fridays, which leads to some complications to communication. Our team members are split up between 2 class periods along with one teammate that can only be there afterschool; therefore we often have communication mistakes or fail to communicate causing complication with the robot.
- Debating on chassis size and creating the chassis
 - Due to the restrictions of the robot being less than 18in.x18in.x18in, our team struggled with creating the chassis for the robot. Our longest metal frames are at a standard length of 16.5in, but this interferes with a basic cube design because we foresaw that the wheels would increase the width of the robot and also the height.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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2:49p.m. - 6:00 p.m. Wednesday, 15th October, 2014

Session #13: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- Debating on chassis size and creating the chassis
 - The two wheels increase the width of the robot to the point where the width was exactly or possibly greater than 18in. To compensate, we chose to use the second longest frame, with a length of 11.75in. On a previous date, we decided that we would create a pinion slide elevator to get the balls into the goal, but this means that our “lift” will have to be initially short enough to stay in the limit. Because the wheels increase the height of our robot, we needed to create a pinion slide elevator that would not require the use of the longest metal frame. This means that the elevator will use shorter frames, but a greater amount. Because of this design choice, our robot will be heavier, which makes it slower, and smaller, which leaves less space for motors, servos, and NXTs
- Finished building the chassis
 - We had finally assembled the basic chassis that was within the size limits stated by the rulebook and with that finished, we are now able to design a way to attach our scoring mechanism to the chassis

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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10:02 p.m. – 12:12 p.m. Friday, 17th October, 2014

Session #14: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Sotelo, Jacky Zhang, Jason Kwan.

Activities:

- Brainstorm possible ideas for the ball carrier
 - With the chassis, the zip tie mechanism, and the rack and pinion slide done, all we need to do was to think about carrier that would house the balls for scoring. We agreed on using plexiglass for the material but then we received word that the shipment of plexiglass would arrive after the scrimmage. So we decided to come up with an idea made out of metal Tetrix pieces to make the ball carrier. However, the rigid structure of the metal pieces proved to be a challenge since they would not give us the same amount of flexibility and versatility if we were using plexiglass.
- Reviewing plans for an FTC scrimmage with a nearby school
 - We received word that we were to do a scrimmage with a nearby school within a few weeks and so we went over on what needed to be done so that our robot will be able to participate in the scrimmage

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Monday, 20th October, 2014

Session #15: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- Brain stormed on how to fix a problem
 - For the part of the robot that lifts up the balls, we needed to figure out what materials it would be made out of. We wanted to use Plexi glass but the order would not come in time for our upcoming scrimmage. So we are doing more research to find a doable material that will come in time.
- Planned strategy for scrimmage
 - Since we have a scrimmage coming up we needed to figure out what are strategy would be. We drew out the court on the white board and traced the path of which we want the robot to go. We figured that our best bet is quickly release all the balls before the other team.
 - We tested our Chassis
 - After, we put our chassis on the round and made sure it moved correctly and that all the pieces worked together with minimal problems. A wire was also interfering with the wheels so we fashioned a small piece that would hold up the wire.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator: Jacky Zhang	Date:
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2:49p.m. - 6:00 p.m. Wednesday, 22th October, 2014

Session #16: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- We slowly began mounting the pinion slide onto the chassis.
 - We slowly put on the pinion slide onto the chassis. Once we began however we realized that we encountered a variety of problems such as how we will align our gears with the servo motors with the gears on the pinion. Additionally, another problem was the tray, as we could only seem to put the tray near the ground to collect the balls which made us lose a lot of height.
- We attended a mandatory power point from a previous club member.
 - This expended some of our time to work on the robot before the scrimmage because the power point was more relevant to the engineering department of the club.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:49p.m. - 2:49p.m. Friday, 24th October, 2014

Session #17: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- After creating the robot's arm we began to make to find ways to mount the servos.
 - Although we were able to add pinion slides to the metal frames, we still had to add the servos for the robot to actually lift the arms up, which posed one of our major problems. First of all, we had to consider the placement of servos because it would affect the height or the design of the robot. Adding them on the top would increase the height because the servo will need a shorter pinion slide to have room. Alternatively, adding them on the bottom would lead to another redesign on which way the "front side" is facing and how the weight of the servo would affect the arm when brought up with the pinion.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:30p.m. –6:00p.m. Saturday, 25th October, 2014

Session #18: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Sotelo, Jacky Zhang, Jason Kwan.

Activities:

- We chose the first choice and found another consideration.
 - The problem is that our robot is compact, and therefore has little room for parts. Because we were using some large gears, found our servos would not have enough room for each. To combat this problem, we found that we could add a servo with gears on one side of the arm, and the other servo with gears on the other side.
- Came up with a possible material for our tray.
 - A possible material that we could use in a plastic bin that we keep miscellaneous items in. We do not have any spare plastic bins in the club so we are searching our homes for spare bins.
- We wired up our servo controllers and tested our servos to make sure they function.
 - We had a box full of old servo motors that we were not sure if they were functioning correctly or not. As a result, we wired up our servo motor controllers and tested them out. Only about 4 were not functioning or malfunctioning so we threw them out.

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Monday, 27th October, 2014

Session #19: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- We rearranged our placement of important elements on the robot.
 - The battery we felt was in an okay place but the NXT, power switch, and the on/off switch was rearranged on the chassis to provide better accessibility and so the pieces do not infringe on other piece's space.
- Started to wire the motors and servos
 - With the motors working with the servos functioning, we then started to wire the motors to the motor controller and then wire that to the servo controller. With both of the controllers wired and ready, we were now a step closer to finishing the wiring aspect of the robot.
 - After closer examination we realized it still was going to block other pieces. So we moved it again and finally found perfect positions for them.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00 p.m. – 6:00 p.m., Wednesday, 29th October 2014

Session #20: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- Brainstormed places on where the remaining parts should go
 - We thought carefully on where the NXT, the battery, the Samantha module, and the on/off switch. We figured out that the NXT and battery should be on the opposite side of where the pinion slide mechanism was so that the weight would be distributed more evenly. The Samantha module and the on/off switch would be behind the front part of the robot since placing it on the opposite side of the pinion slide would make connecting the wires more difficult due to distance. We finished placing the NXT and battery on the robot. At first we finally decided on a position for the two main parts but then
- Finished attaching servos into the pinion slide mechanism
 - With the actual pinion slide mechanism done, all that was needed to be accomplished was attaching the servos to the pinion slide and we successfully did connect them together without major complications.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:49p.m. - 2:49p.m. Friday, 31st October, 2014

Session #21: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Soletto, Jason Kwan.

Activities:

- We fixed our pinion slide.
 - It kept on going all the way out and we realized we just needed to simply add a small screw on to stop it. Then we were not sure if we should use three medium sized pieces of two long ones. We finally decided on three pieces though.
- We broke our power switch and had to fix it
 - When we were attaching the on/off switch we had to unplug the wires and switch them because they were incorrect. The wires were very difficult to pull off and after 10 minutes of excess pulling it finally came out, but the terminal came out with it. So we were going to see if we could solder it back on but luckily we found a spare.
- We started learning how to program.
 - Our team was taught how to program the joystick controls for the TETRIX and NXT by a more senior member of the program. We were only taught the basics and were not well versed in programming but it got us starting and we used sample programs to fix and correct any mistakes that were made.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. –6:00p.m. Monday, 3th November, 2014

Session #22: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Sotelo, Jacky Zhang, Jason Kwan.

Activities:

- We began programing movement for robot, which use joystick controls.
 - After working on the hardware components of our robot, we began working on the software components. We began with basic movement to try to see if our batteries, NXTs, motor, and motor controllers work. Surprisingly, we ran into some trouble due to some miscommunication and forgot to attach the servos' gears.
- We ran into some more trouble programing.
 - For some reason the robot would move slowly on its own without any input. We found that the controller's joysticks would sometimes be in a position that is "not zeroed" or centered before the code is compiled, which would cause the robot process that the joystick is not in the center even though it is. This misreading could cause a lot of problems controlling the robot. To solve this, we added a certain threshold value for the joystick to overcome in order for input to be processed. Therefore any minor inaccuracies or small misreading in the robot's movement will be rooted out.

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Wednesday, 5th November, 2014

Session #23: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- We had minor conflicts within the team.
 - We conflicted on what we should prioritize, the wire management or the function of the tray we have not attached yet. In the end, we settled on mounting a tray/scoring system to be the priority and kept wire management for another day.
- Finished programming the robot
 - The coding for the motors was finished and all that was needed to do was to finish the coding for the servos. We were able to code the servos so that the left and right bumper of the game controller would raise the pinion slide up while the left and right trigger made it go down and reset to its original position.
 - Problems with the servos
 - We began to test them but there was a problem. The first pinion slide was able to go down without a problem but it kept on twitching every time it went up. The other pinion slide went up without a problem but kept twitched when we tried to make it go down. We tested out new values to see if that fixed it and it did.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:52 p.m. – 2:35 p.m., Friday, 7th November 2014

Session #24: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- Began to test different speed values for the motors.
 - After all of the programming was finished, we tested out how the robot performed in maneuverability and inputted different values into the program that would change the robots speed to see which one is the optimal value. Eventually we got a value that was approximately the original value but scaled down by a factor of 9.
- We added a “sweeper” mechanism to the ball holder
 - Since we need a way to actually get the balls in the ball holder we had to make a new mechanism. So we got a Tetrix pipe and attached zip ties all around it and then connected that to a servo. So that when the servo is running, the pipe will spin with the “brushes” (zip-ties) and pull in the balls. We then used a servo bracket to attach this device on the ball holder.
- We found the Samantha Module
 - After a week of looking we finally found a working Samantha with the correct wires. So we attached it securely our robot.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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2:49p.m. - 6:00p.m. Wednesday 12th October, 2014

Session #25: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hseih, Jacky Zhang, Jason Kwan.

Activities:

- We built the ball holder
 - We got a hold of a small size box and cut it according to the maximum dimensions that would fit our robot. Then we attached it on the pinion slide.
- Moving the support Frame
 - We have noticed that our support frame that was originally at the front of the robot was blocking the container for the balls. Whenever we would move our robot to score, there would always be a distance between the container and the “goal” because the frame would push the “goal” back. In addition, the frame was also blocking the servo from collects the balls and unloads the balls by stopping the zip ties tied to the servo’s pipe. We decided to move the arm closer to the front of the robot, and moved the frame to the back. By doing this the balls will move into the container and, when unloading the balls, the distance between the container and the “goal” will be closer. The only flaw in our plan was that we needed to relocate the compartment we built for the battery.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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2:49p.m. - 6:00p.m. Friday 14th November, 2014

Session #26: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hseih, Jacky Zhang, Jason Kwan, Isaiah Sotelo.

Activities:

- Received order of plexiglass
 - We had previously sent out an order of plexiglass around six weeks ago but we received that we were going to have a scrimmage with a nearby school and so we abandoned the idea of using plexiglass as the ball carrier. However the order finally came in and so we had the dilemma of whether to keep the current ball carrier since it was finished by wouldn't work as well or scrap it to make a plexiglass one that would work better but would take a risky amount of time to make it since the scrimmage is next week. In the end, we decided to make it out of plexiglass because the current ball carrier was just not stable and we could easily switch back to the old one if the plexiglass one wouldn't work or be finished on time.
- Began working on a mechanism to move the rolling goal
 - We came up with an idea of having a servo move an axel that would move down to latch onto a rolling goal and move up to release. This mechanism is important because then we would be able to push the rolling goals into the scoring box.

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00p.m. – 6:00p.m. Monday, 17th November, 2014

Session #27: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Sotelo, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- We worked on wire management
 - We realized that wires once again were a problem because they still got caught in the gears. This would make the robot jerk and stall around. So we cut some zip ties into very small pieces and used those to hold down some wires.
- We worked on programming
 - Since we needed to program the robot in autonomous we had to look at some programming from a past robot and study that. And so there are two ways we are thinking about for programming in autonomous. One thing we had to figure out is how many encoder counts are in a foot. So we had a mini “lab” and tested many times to get a precise answer.
- Found out about our new box
 - We checked in with the Composites team and they told us their progress on our Plexi Glass box was almost done.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00 p.m. – 6:00 p.m., Wednesday, 19th November 2014

Session #28: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- We received our finished Plexiglass tray.
 - The composites team in our engineering program finished fabricating our Plexiglass tray we planned to use for the competition. We found however, that we did not have time to attach it in time for the scrimmage.
- We started the coding for our autonomous program.
 - After a while of studying our past autonomous programs from older members, we learned a good portion of the programming. As an attempt to code the autonomous program without a game piece, we had to figure out the encoder count required for one foot of movement. We ran multiple tests for the encoder count and took the average of the tests. We then used that value to code the robot to move however feet we need to. We realized also that we needed a turning program but we could not understand the coding behind it.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:49p.m. - 2:49p.m. Friday, 21st November, 2014

Session #29: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Soleto, Jacky Zhang, Jason Kwan.

Activities:

- Testing the joystick controls
 - To ensure that the controls are still operational, even after the adjustments and adding the encoders, we tried testing all the controls we had initially created in Robot C. However, there were some disparities we noticed in the wheel motors. Before we reduced the robot's motor power because we wanted precision when the robot turns and found no problems with the speed. Now the robot's speed has considerably decreased and so we took out the motor power limiters we had on the wheel motors.
- Creating the autonomous function for moving the robot forward.
 - Now that we have completed creating a functioning robot, we focus on other objectives to earn more points. By using the data we collected from testing the amount of encoder counts to motors required to move one foot, we created an autonomous function that would allow the robot to move forward a certain distance. We did not have the room to attach sensors, so we decided to have a more rudimentary approach to knocking down the pole.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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2:51p.m. – 6:00p.m. Monday, 24th November, 2014

Session #30: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Soletto, Jacky Zhang, Jason Kwan, Calvin Hsieh.

Activities:

- Accessed the problems that occurred during the scrimmage at Wilson High School.
 - We had a scrimmage with Wilson on Saturday and we found that a lot of things went really wrong. First, we had only brought in two batteries and the fuse on one of them broke. Also our zip ties didn't have the reach to latch onto the balls it rams into and so instead of sucking them into the box, it would actually push them away from our robot. Also our robot wasn't designed well enough in order to hit the holding mechanism that keeps the balls from entering the field so we were really frustrated every time we hit it but it wouldn't fall down. Lastly, our robot didn't have a way where the driver could judge when to stop extended the pinion slide and so because of that, we had to resort to having team members going at different angles to tell the driver when to stop extending. However that would be illegal and so the driver then decided to eyeball when the arm was in perfect position but that didn't go so well.

Recorded by: Jason Kwan	Date:	Journal Coordinator: Jacky Zhang	Date:
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3:00 p.m. - 6:00 p.m., Monday, 1st December 2014

Session #31: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Sotelo, Jacky Zhang, Jason Kwan.

Activities:

- Assessed all problems that happened during scrimmage
 - During our scrimmage our robots battery died causing the robot to halt. We looked it over and what happened was we overcharged it and the fuse ended up being blown. So our opponents lent us a fuse which temporarily solved the problem. So to avoid this from happening again we figured out a system to charge the battery without frying the fuse. Another thing that went wrong at the scrimmage was that we could not knock over the sticks holding up the balls. Our original plan was to simply ram into it, knock the stick down, and collect the balls. What we did not consider was that we wouldn't be able to knock down the sticks. We had continuously hit the stick but they were stuck in place. It did not finally go down until we rammed them from a certain angle. To fix this we decided to add in a metal piece that would hook onto the sticks and make it easier to pull.

Recorded by: Isaiah Sotelo	Date:	Journal Coordinator:	Date:

3:00 p.m. – 6:00 p.m., Wednesday, 3rd December 2014

Session #32: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Calvin Hsieh, Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- We re-attached the plexiglass tray.
 - We took our plexiglass tray that now is missing an edge, and attached the collecting mechanism to it. The rotating cylinder is free to be lifted up because of the missing part of the plexiglass. We attached the tray that has been secured with a few zip ties, to the pinion slide.
- We tested out our robot.
 - We connected our robot with the computer with a Bluetooth dongle. We test drove the robot but soon figured out the collecting mechanism did not work so well. We have concluded to sanding down the front edge of the plexiglass as it was too thick for balls to be pushed inside.
- Finalized the engineering notebook.
 - Half of the team went to look over the requirements and complete what we need for the engineering journals. We found some requirements that we did not have and are trying to fix the problems.

Recorded by: Calvin Hsieh	Date:	Journal Coordinator: Jacky Zhang	Date:
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12:49p.m. – 2:49p.m. Friday, 5th December, 2014

Session #33: Engineering Class @ Los Altos High School (Hacienda Heights, California).

Attendance: Isaiah Soletto, Jacky Zhang, Jason Kwan.

Activities:

- Sanding down the front of our plexiglass container
 - When we tested our containers collection device, we found that the bottom of our plexiglass container may be blocking the balls from moving into the container. The reason is that the plexiglass is thick and the balls have to maneuver over this thickness to get into the container. Sadly, the zip ties and servo do not provide enough power to shove the balls in, so we decided to sand down the front edge of our container so that there is a ramp. This ramp will allow the balls to maneuver more easily over the thick bottom of the container.
- Screwing in the plexiglass container
 - One of the major problems we faced while we were finishing up was that the servo mounted to the plexiglass was sticking out and would collide with the left side of the frame and prevent the container from lowering to the lowest position. After some brain storming, we used screw spacers and the larger screws to make the container shift to the right, and it prevented the servo mount from colliding with the frame.

Recorded by: Jacky Zhang	Date:	Journal Coordinator: Jacky Zhang	Date:
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