



"Sophomore year. First day. New school. I walked into Java class in room 608 and saw a weird looking contraption sitting in the corner of the classroom. It was the "Moonkey". "What's that?" "A robot." "Who made it?" "The Robotics Club." "Here?" "Yes." I knew that was

what I wanted to be a part of. September 14th, 2011, the day before my birthday, was the first lunch meeting of the year, and I joined Robotics. That year changed who I was. I had made a resolution right before attending Lynbrook to be more active and social. Through promoting spirit at the competitions, writing "Tail of the Monkey's" vision code in 2012, and machining in 2013, Robotics helped me do just that. Now it's 2014, and I've grown even more. Being part of the girls' subsystem, I got to design, CAD, and machine the drivetrain. On the administrative side, I'm planning our regionals and other social events. Robotics made me a better person. It taught me to try new things, learn new skills, and most importantly, how to convey information to other people, be it teaching or just ordering enough food for 40 people. I hope this team continues to inspire others like it inspired me."

-Eva Lomazov, Event Manager
2013-2014



Lynbrook Robotics, FIRST Team 846 provides motivated students with the opportunities to excel in science, technology and business. Founded in 2001, Lynbrook Robotics operates within Lynbrook High School, a public school located in San Jose, CA in the heart of Silicon Valley. Our team is a student run, extracurricular organization with over one hundred members and has been operating for thirteen years. By participating in the FIRST Robotics Competition, our robotics program introduces students to engineering and helps them develop the skills they need to manage a complex project involving many individuals with talents in software, electronics, mechanics, and art.

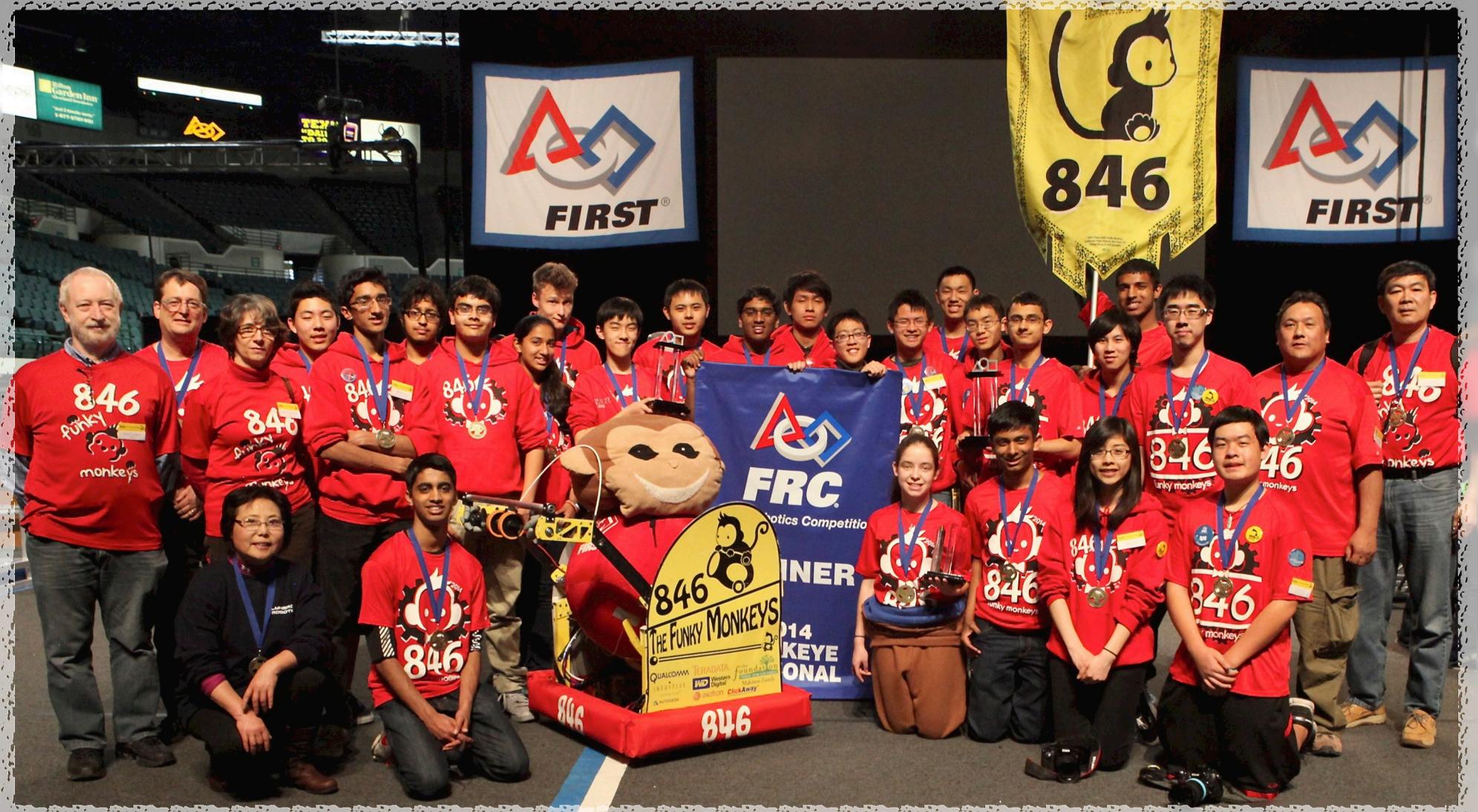


"Robotics has influenced me to give back more in my community in order to help all kinds of people. The experience and skills I learned in robotics are ones that can never be taught in a classroom environment. Skills such as teamwork, machining, and community outreach. During build season, competitions, and off season events robotics has made me use these skills countless times. From designing to building to finally competing at a national level is in itself a unique experience that comes with a lot of jokes and great times. I remember at Boston that the team was so excited to see snow everywhere that even Mr. G started a snowball fight on our way to a team dinner. From starting out as a freshman who didn't know anything to becoming the Safety Captain to being one of the many photographers on the team I can make sure people are safe while having fun while also capturing precious moments, both serious and funny. Through Robotics I have found a group of people that share the same interests and motivate me to do more, a group that I have had precious memories with and can proudly call my second family."

-Abhishek Johri, Officer at Large
2013-2014

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LYNBROOK ROBOTICS 2014

- WRRF CALGAMES** ♦ Semifinalists, Runnerup CAD Award, Entrepenuership Award
- MADTOWN THROWDOWN** ♦ Alliance #4 Captain, Wes Walter WOW Factor Award
- BUCKEYE REGIONAL** ♦ Regional Winners, #1 Pick, Xerox Creativity Award
- SILICON VALLEY REGIONAL** ♦ Semifinalists, #4 Pick, Motorola Quality Award
- WORLD CHAMPIONSHIP** ♦ Newton Division #3 Pick, Highest Offensive Power Ranking



Funk Cannon

Max. Height: 45.3 in.
Length: 25.75 in.
Width: 29.5 in.
Weight: 99 lbs.

Lynbrook High School Robotics
FIRST Team 846

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THE

FUNKY MONKEYS



Members

MENTORS

David Giandomenico	Head Coach
Yang Xie	Mech. Design & Founder
Ralph Lowd	Mentor
Fernando Reyes	Machinist
Payton Wong	Machinist
Michael Cox	Mechanical
Gerald Haas	Team Enthusiast
Nancy Haas	Team Enthusiast
Wes Harrison	Mentor
Stephen Giandomenico	Software
Milind Joshi	Software
Alex Kanaris	Software & Control
Ravi Iyer	Project Manager
Roy Chua	Marketing
Joan Lin	Artistry

OFFICERS

Miles Chan	Co-President
Anurag Makineni	Co-President
Michael Lin	Vice President
Akshat Agrawal	Vice President
Eric Yeh	Vice President of Engineering
Rahul Iyer	Co-Hardware Lead
Raphael Chang	Software Lead
Srinjoy Majumdar	Co-Electrical Lead
Tony Peng	Co-Electrical Lead
Nikita Seth	Public Relations Officer
Nikunj Khetan	Treasurer
Patrick Dong	Secretary
Michael Chang	Historian
Brent Yi	Webmaster
Eva Lomazov	Event Manager
Benedict Chua	Officer at Large
Abhishek Johri	Officer at Large
Megan Lau	Officer at Large
Owen Li	Officer at Large
Julia Ma	Officer at Large
Varun Parthasarathy	Officer at Large
Alex Shmakov	Officer at Large
Brandon Strong	Officer at Large
Manoj Vasishta	Officer at Large

LYNBROOK ADVISORS

George Peck	Staff Advisor
John Dwyer	Principal
Judy Boehm	Financial Specialist
David Erwin	Asst. Principal of Activities
Steve Chamberlain	School Facilities Manager

14

Akshat Agrawal
Miles Chan
Michael Chang
Andy Cheng
John Hong
Navneeth Jayendran
Abhishek Johri
Maitreyee Joshi
Michael Lin
Eva Lomazov
Anurag Makineni
Aurea Siu
Joseph Thomas
Alex Xu
Eric Yeh

SENIORS

Raphael Chang
Selina Chang
Patrick Dong
David Fine
Nikunj Khetan
Megan Lau
Varun Parthasarathy
Tony Peng
Sahil Sancheti
Alex Shmakov
Manoj Vasishta
Brent Yi
Joshua Yuan

JUNIORS

Benedict Chua
Rohit Dhamankar
Ryan Eckert
Aayush Gupta
Amrita Iyer
Rahul Iyer
Gauri Jain
Yashodhan Joshi
Jessie Kuo
Owen Li
Nicolas Liang
Maggie Luo
Julia Ma
Srinjoy Majumdar
Sam Morris
Akhil Padmanabha
Rahul Sarathy
Nikita Seth
Chetan Soman
Brandon Strong
William Wang
Yilai Wu

SOPHOMORES

Vaishnav Balaji
Morgan Chan
Blair Chen
Horace Cheng
Ethan Chuang
Eric Fu
Wesley Gu
Aya Ide
Justin Juang
Anshul Kale
Frank Lin
Manasa Makineni
Arsh Malhotra
Kai Malloy
Neilay Shahi
Rohit Sriram
Kushal Tirumala
Prapurna Upputuri
Pragna Upputuri
Preethi Varadharajan
Brian Wang
Katherine Xiao
Alex Xu
Teresa Yang
Jenny Zhang
Alex Zhao

FRESHMEN

OFF-SEASON ACTIVITIES

Raphael teaches a student how a quadrature encoder works by inspecting its waveform with an oscilloscope.

– 2013 WRRF Workshops



A key feature of our workshops is that they are headed entirely by students. Here, Manoj and alumnus Stephen lecture about control systems.

– Lynbrook Software Workshops





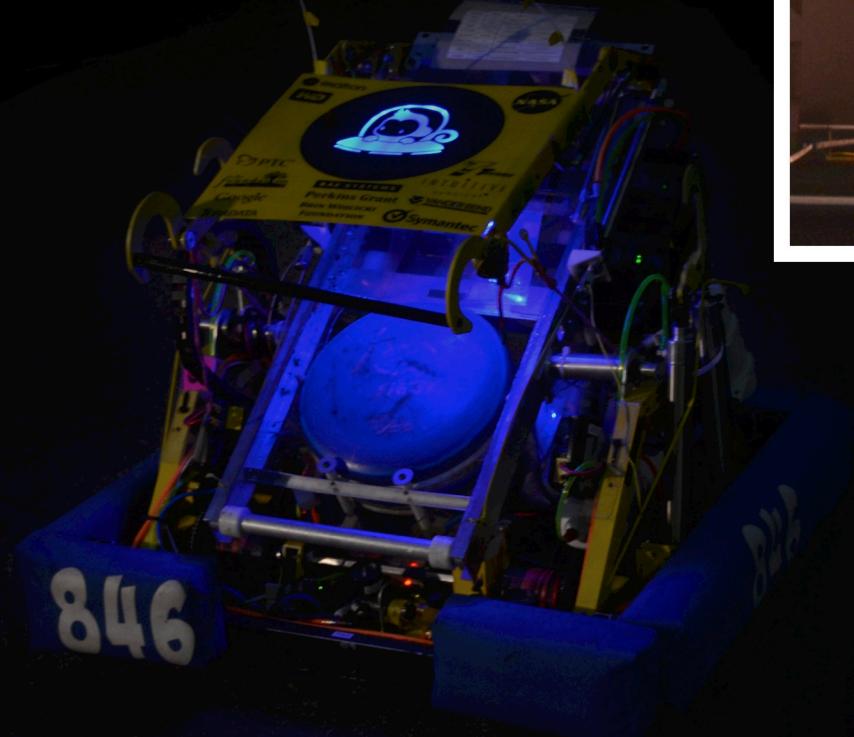
Nikunj demonstrates proper use of the minimill to Pragna.
– *Machining Training Workshop*

Eric teaches rookie members the fundamentals of using shop machines.
– *Machining Training Workshop*



Rahul points out some cool features of the robot to exchange students from Taiwan.

– Cupertino Sister City Exchange Program



Cupertino Mayor Orrin Mahoney is delighted by our robot's performance.

– Cupertino City Hall



Miles shows Stephen Milligan, the CEO of Western Digital, how to operate the robot.

– Western Digital Engineering Day



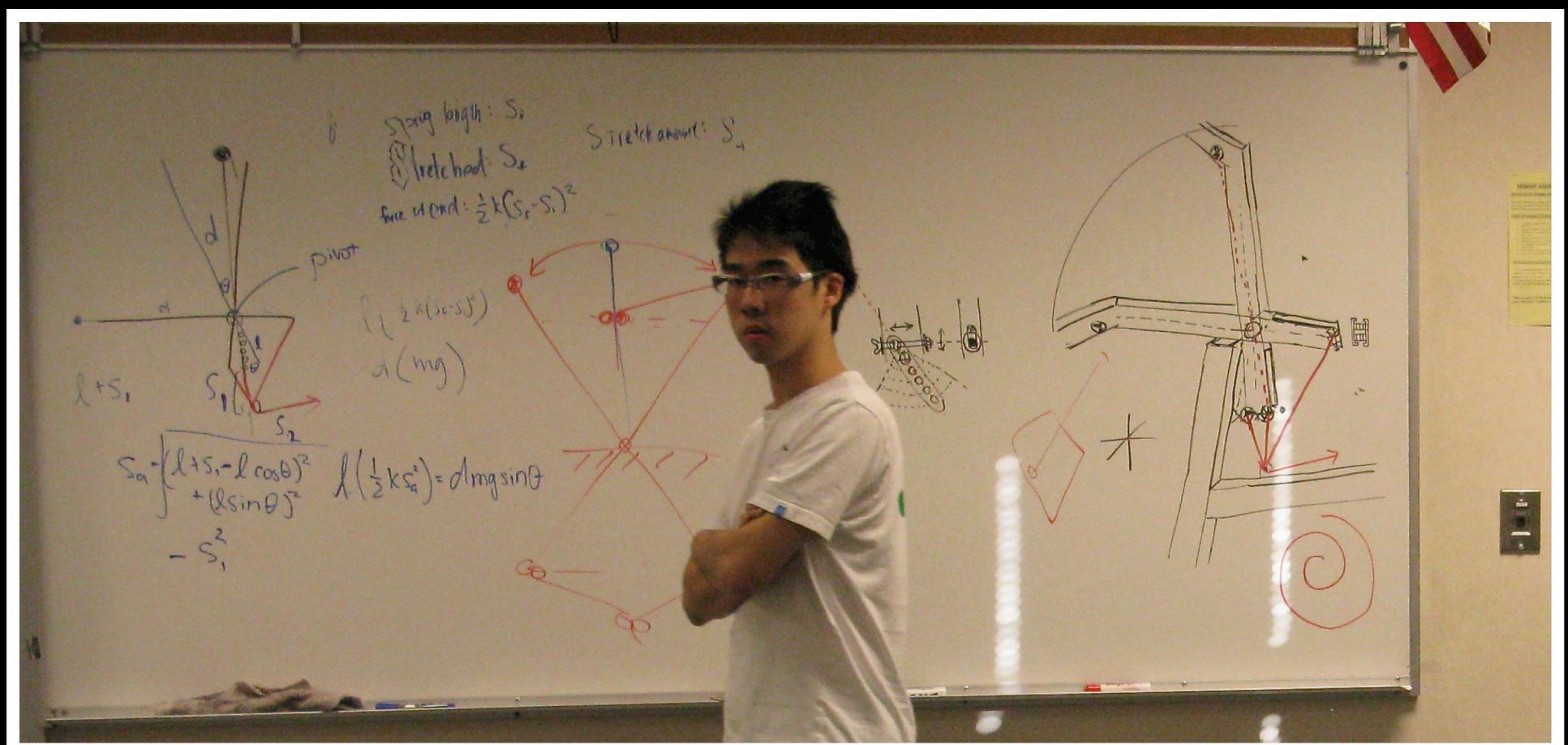
Anurag trains a future drive team, setting the wheels in motion at an early age.

– John Muir's Harvest Festival

BUILD SEASON

In deep thought, Eric tries to decipher the new game challenge.

– *The Design Room*





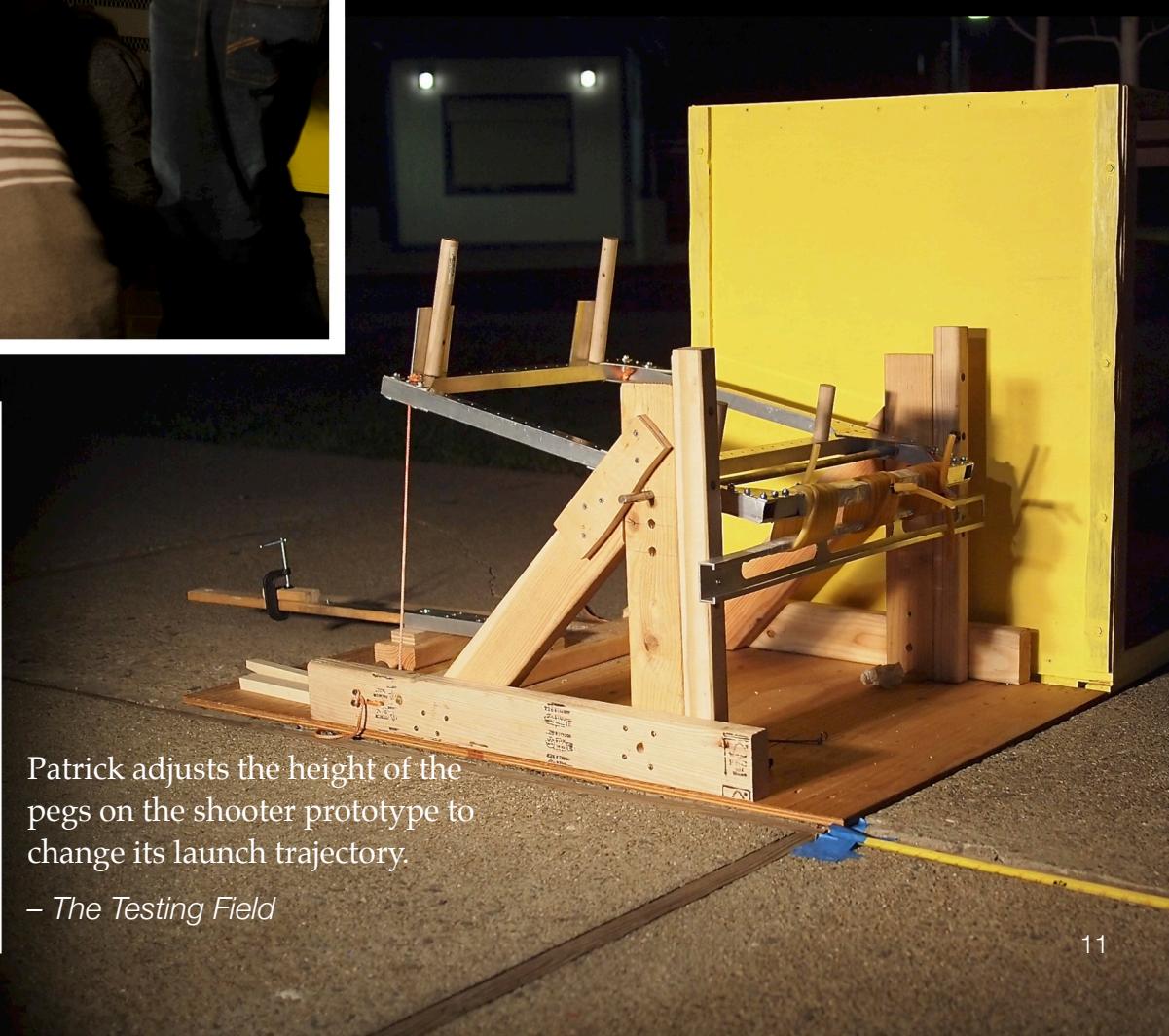
Nikunj leads a group of students in assembling a prototype collector.

– The Testing Field



Patrick adjusts the height of the pegs on the shooter prototype to change its launch trajectory.

– The Testing Field





Amrita learns the art of welding under the tutelage of Johnny "The Welder" Gambini.

– Vander-Bend Manufacturing



Rookie members, Pragna and Prapurna, become proficient operating the lathe.

– *The Shop*



The all-girls subsystem poses with their creation, the robot's drivetrain. This group was created as a challenge to the girls to increase their involvement in the technical aspects of the club.

– *The Shop*

Left to right: Eva, Pragna, Amrita, Morgan, Maitreyee, Prapurna, Nikita

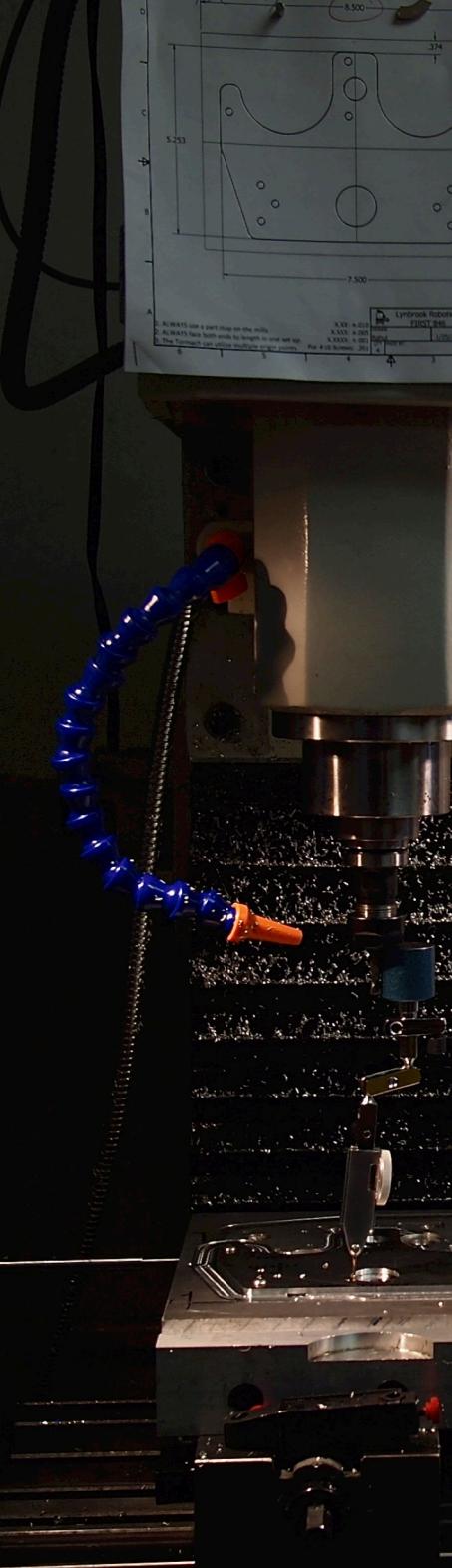
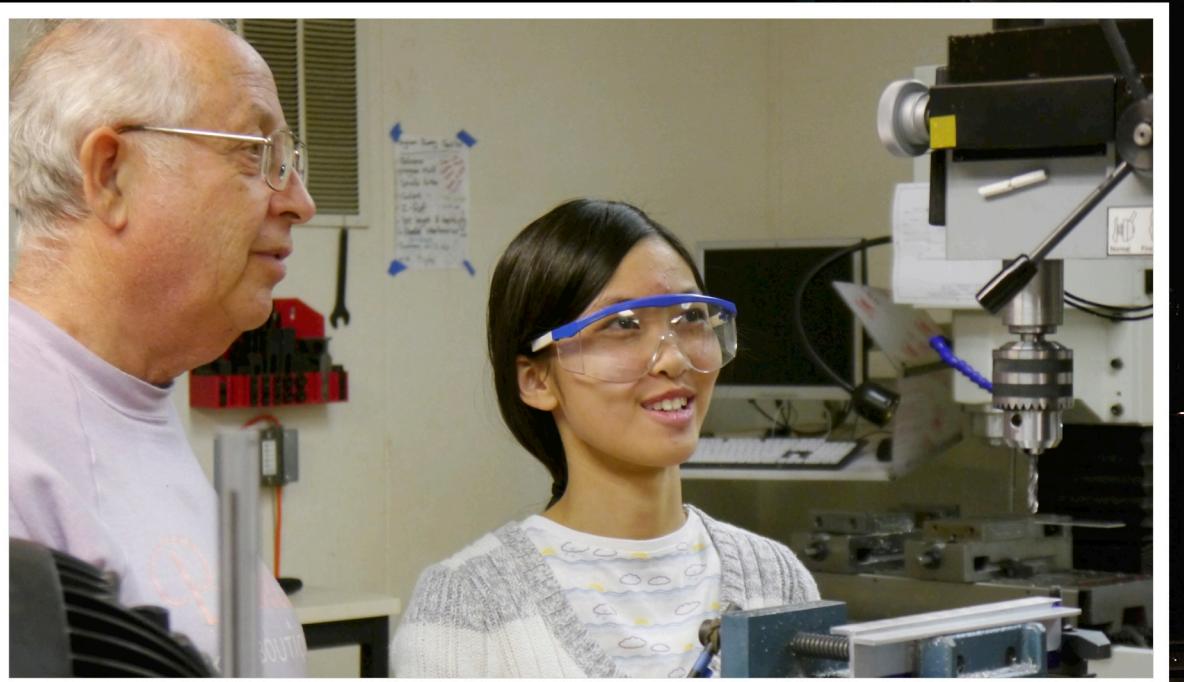
Owen uses his
manly strength
to change a tool
on the CNC.

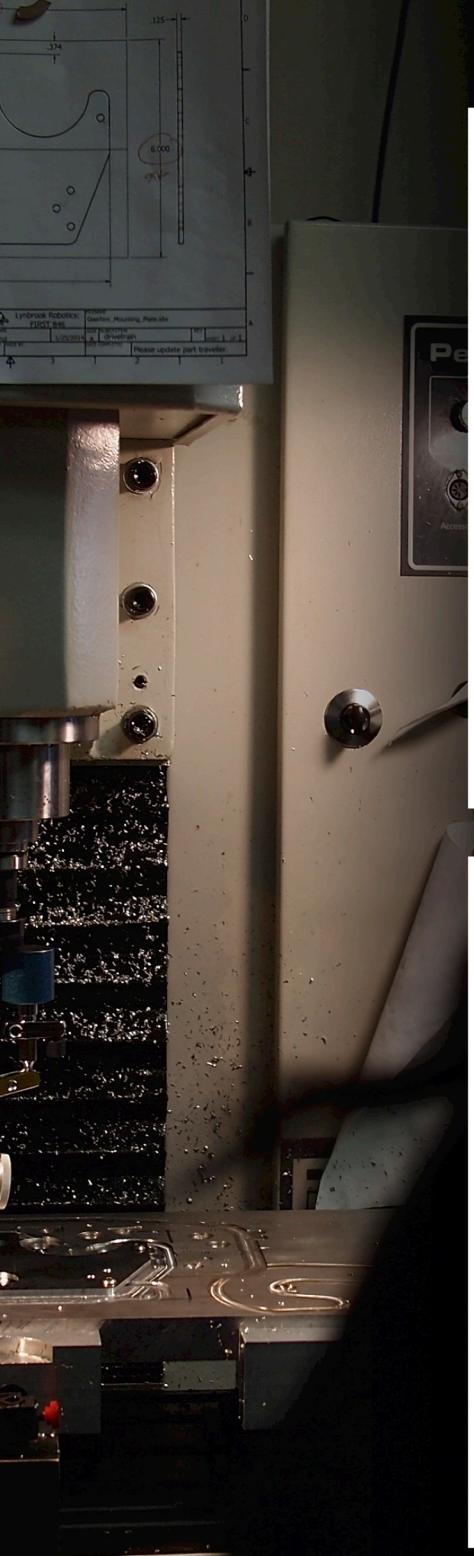
– The Shop



Mr. Lowd and Morgan
inspect the mini-mill
parameters prior to
machining a part.

– The Shop





Fernando's gone crazy
after a long and tiring
build session.

– The Shop



Yash and Mr. Lowd switch
end mills on the mini-mill.

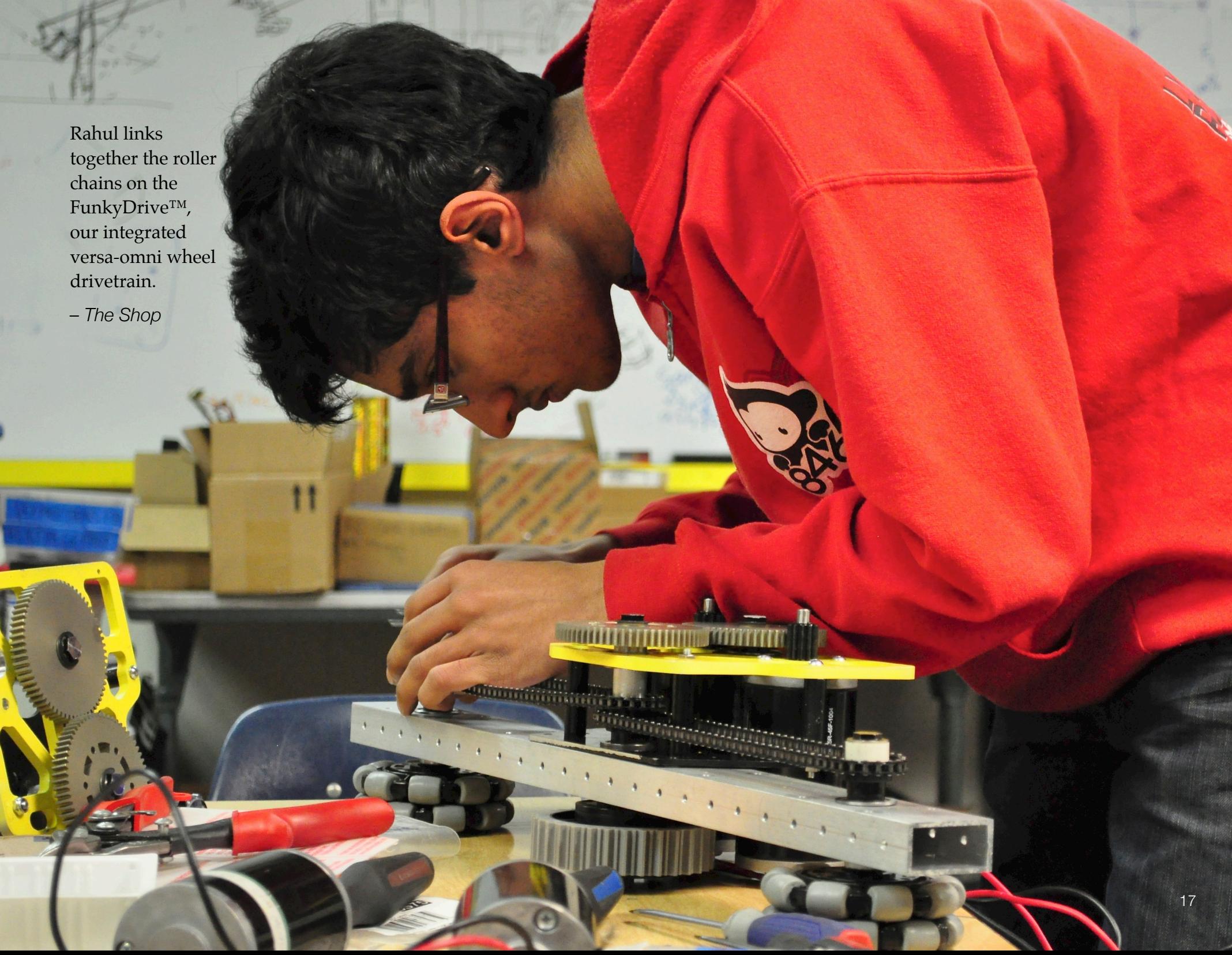
– The Shop



Miles proudly holds the finished worm gearbox that he designed.

– The Design Room



A young man with dark hair and glasses, wearing a red hoodie with a white graphic on the sleeve, is working on a complex mechanical assembly. He is focused on connecting roller chains on a drivetrain. The assembly includes a yellow frame, black gears, and a silver metal frame. The background shows a workshop environment with cardboard boxes and tools.

Rahul links
together the roller
chains on the
FunkyDrive™,
our integrated
versa-omni wheel
drivetrain.

– The Shop



Mr. Harrison



Payton

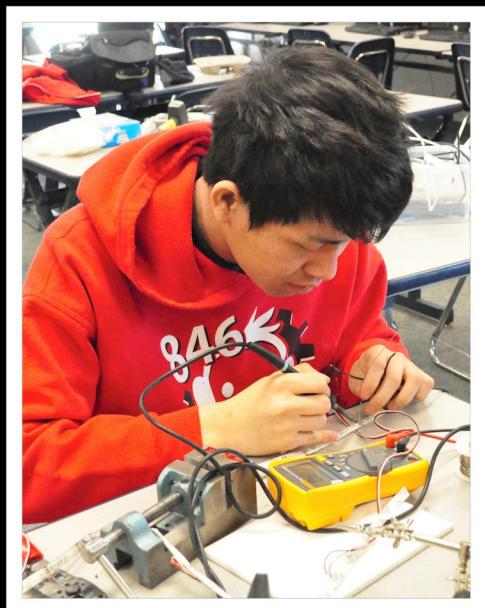


Racing against the clock, students combine their efforts to complete the robot in the final hours of build season.

– The Shop



Tony

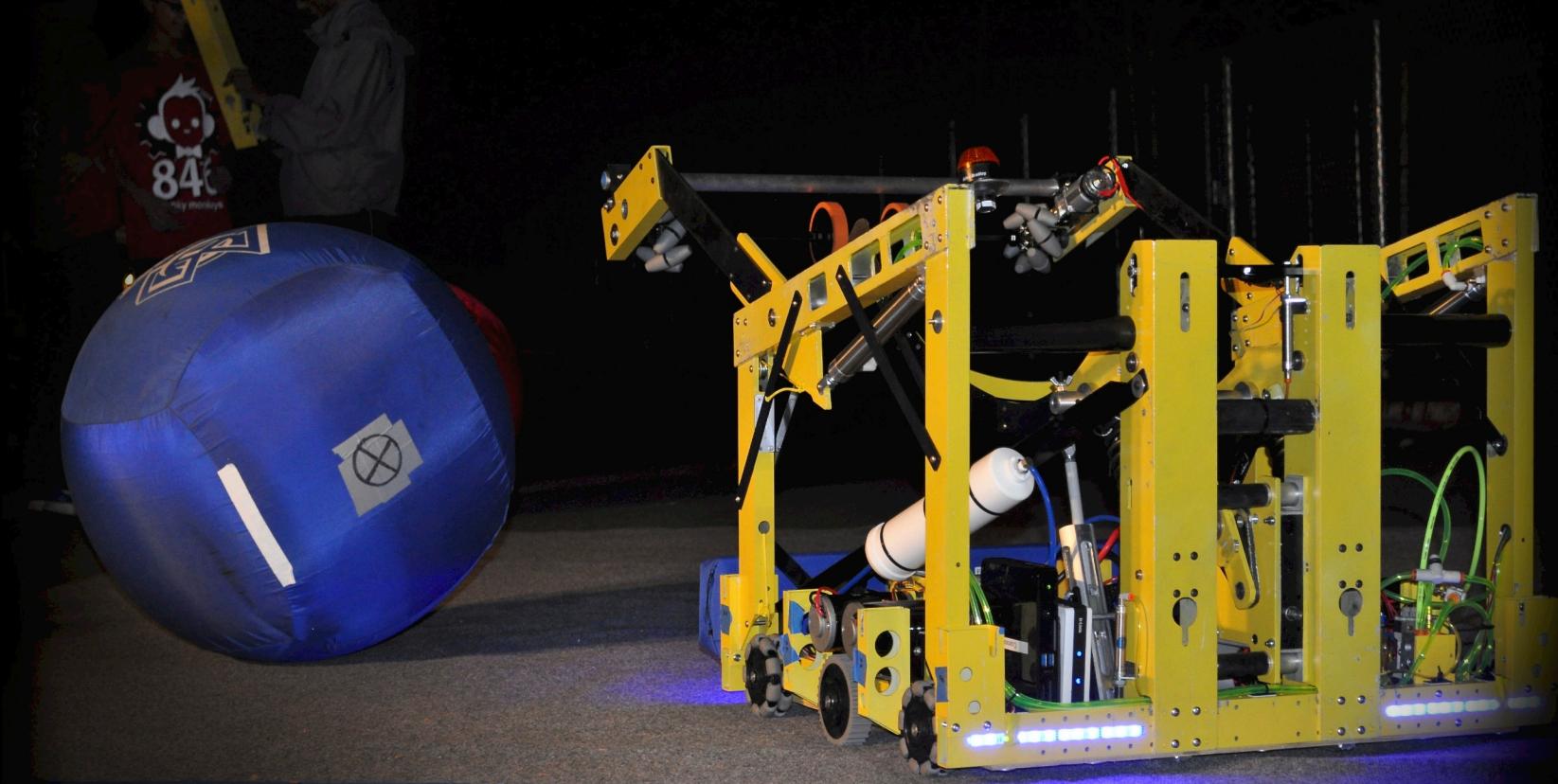


Brent



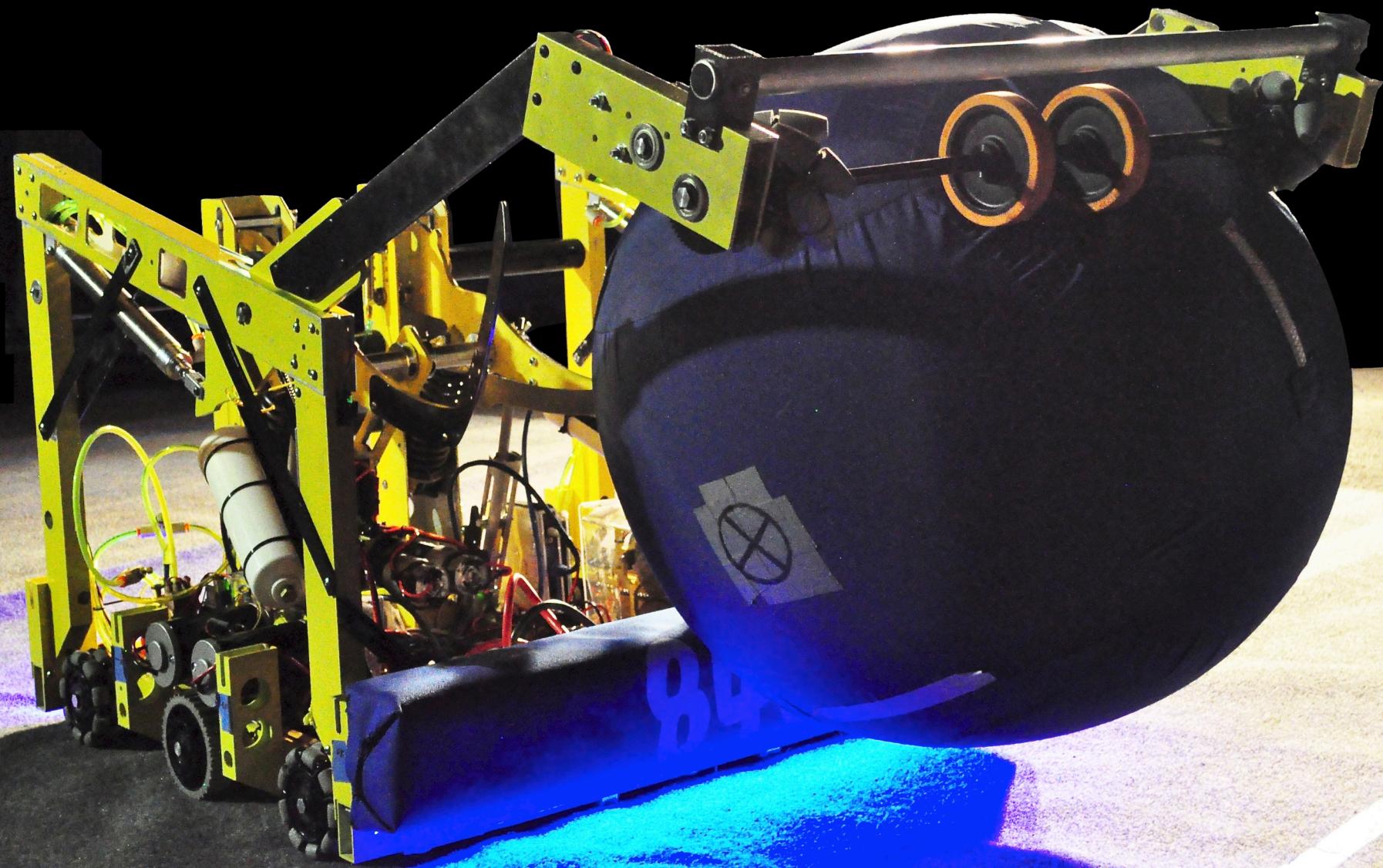
Raphael tweaks the code prior to Funk Cannon's first demonstration.

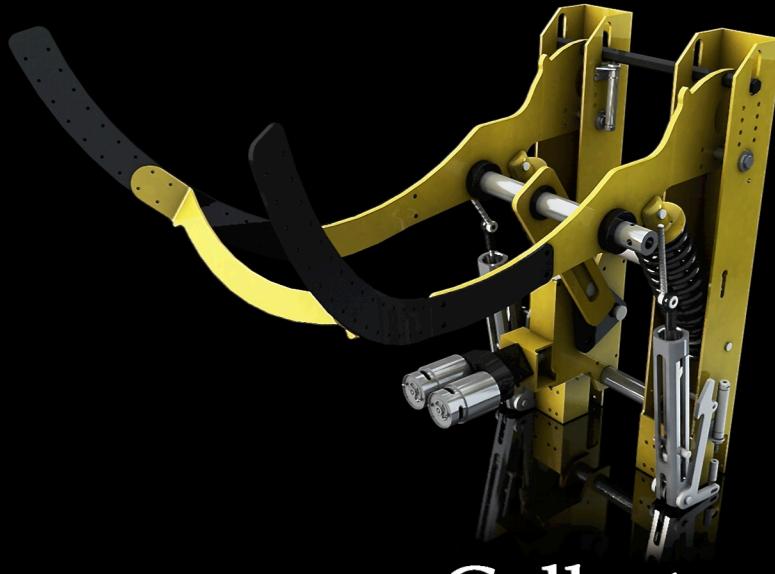
*– Final Build Day,
The Testing Field*



Six weeks of meticulous planning and design work come to life in the form of The Funk Cannon, our 2013-2014 robot.

Funk Cannon Modular Design





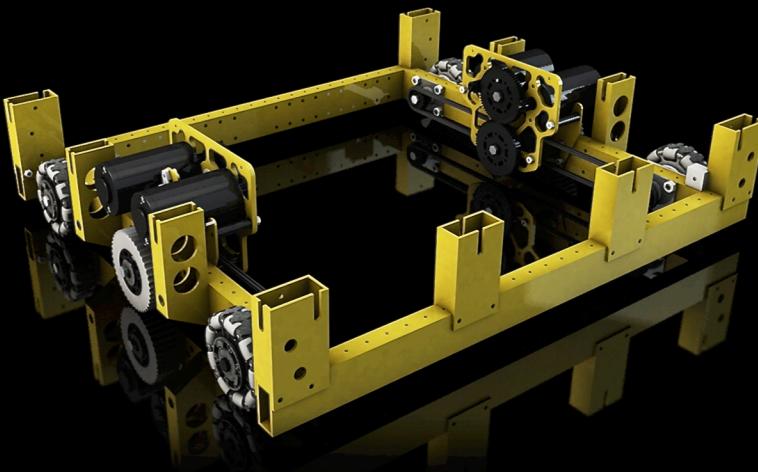
Shooter

- Reloaded & released by multi-dimensional crank, driven by a custom worm gearbox to prevent backdrive
- Two-position latch allows for 2 shots
- Die springs soften the catapult's impact
- Truss & Close Goal shot centered @ 4ft with a 2 ft position tolerance to easily shoot and lob the ball into the goal and over the truss at any angle



Collector

- Quick intake of ball across the entire width of the robot
- Featuring Mecanum wheels to funnel the ball into the robot faster
- Miter gears system allows the motor's position to clear ball intake while having simple mechanical energy transfer.
- Perfectly counterbalanced arms using surgical tubing to lessen pneumatic load



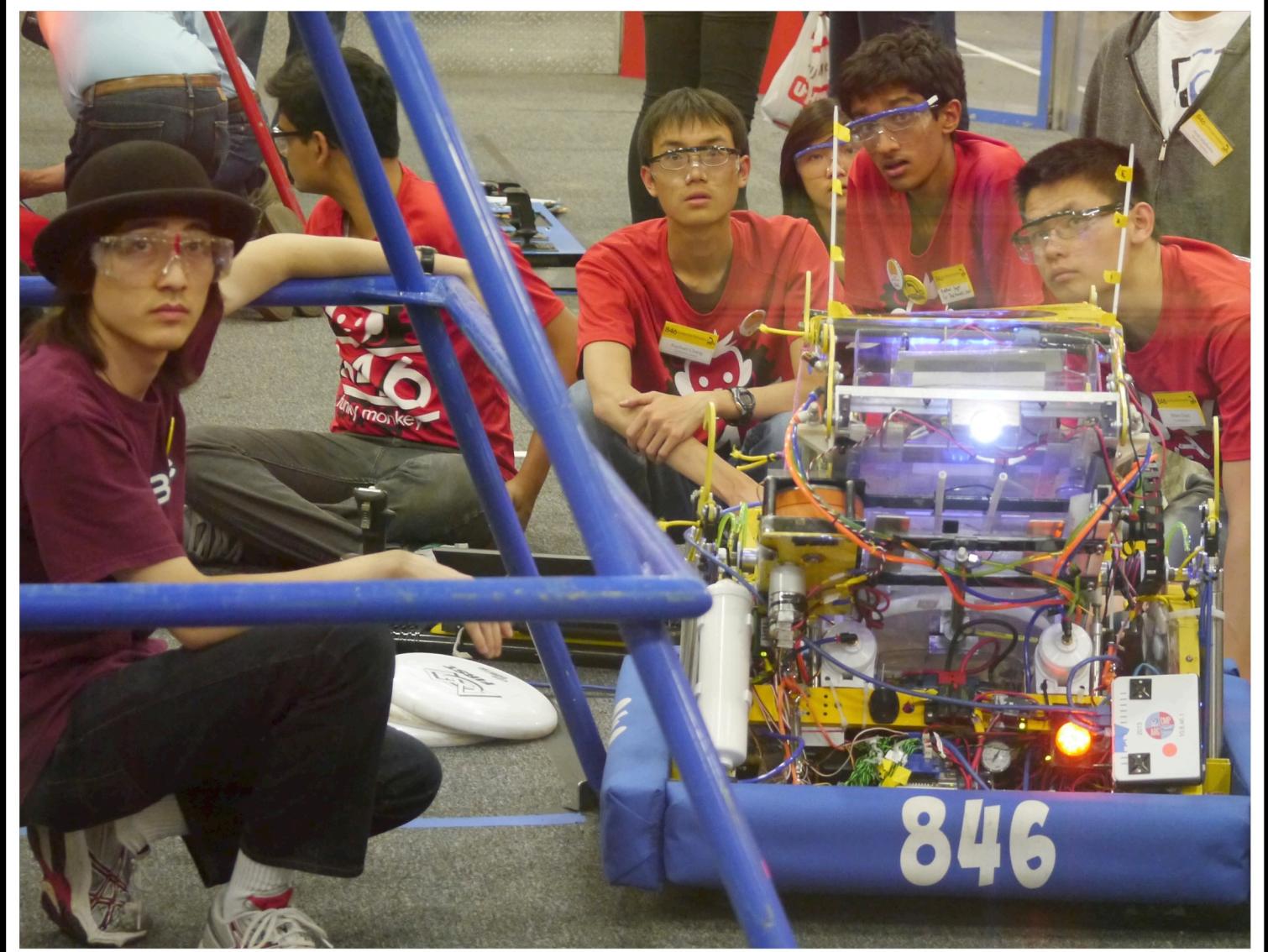
Drivetrain

- Designed and machined by girl-subteam.
- “Funky Drive” wheel layout with 4 omni wheels to reduce turning resistance, 2 traction wheels for controllability, and no center drop for stability
- Simple and reliable low-maintenance drivetrain that has single speed of 16.3 ft/s and fixed straight no tensioner chain runs
- Cantilevered wheels and inverted gearboxes for maximum electronics space

COMPETITIONS

Before the CalGames competition starts, Stephen, Srinjoy, Raphael, Chelsea, Rahul and Miles tune our robot, the *Ultimate Funky Object* to make the perfect shot.

– WRRF's CalGames 2013





Fernando and Miles replace the crank link with one made of steel.

– *FIRST World Championship,*

St. Louis, Missouri



Akshat and Michael push the wheel down the oversized shaft, firmly securing the wheel from slipping.

– *Buckeye Regional, Cleveland, Ohio*

In the Pits

In the Stands

Akshat and Megan scrutinize
the robot's performance.

– WRRF's CalGames 2013

William and Andy look over scouting
data in order to pick good alliance
partners for the elimination matches.

– Buckeye Regional, Cleveland OH

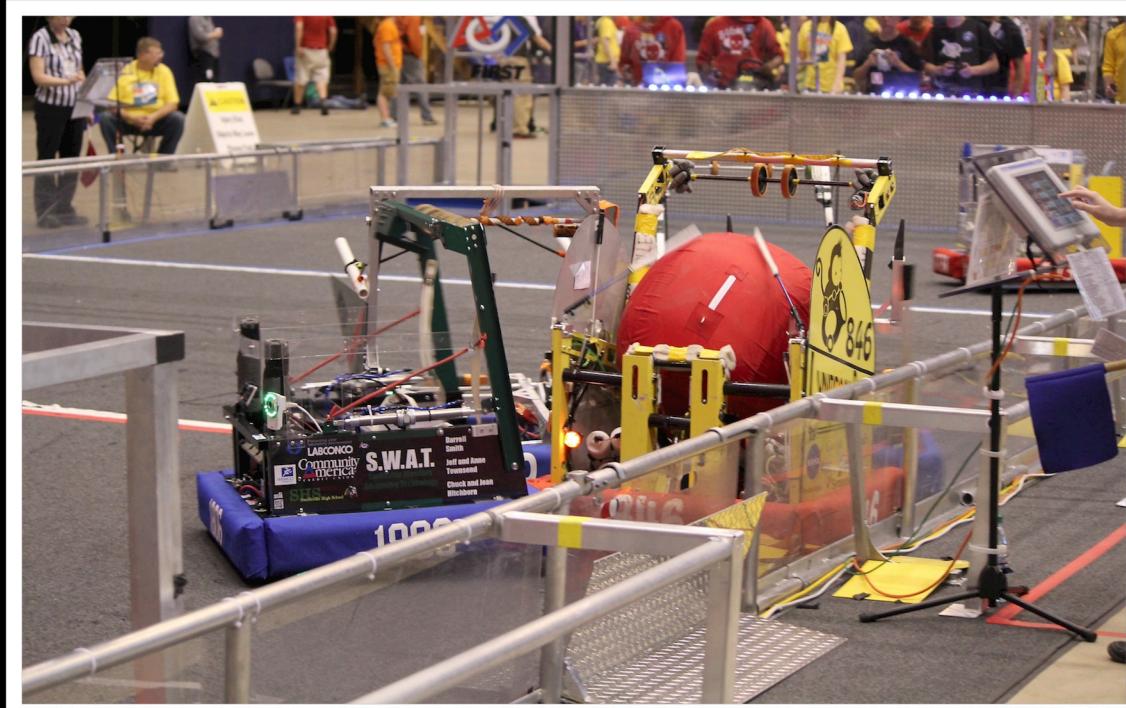




The drive team maneuvers the robot past the opposing alliance.

– FIRST World Championship

Left to right: Raphael, Anurag, and Miles



The Funk Cannon plows through the Blue Alliance blockade to score.

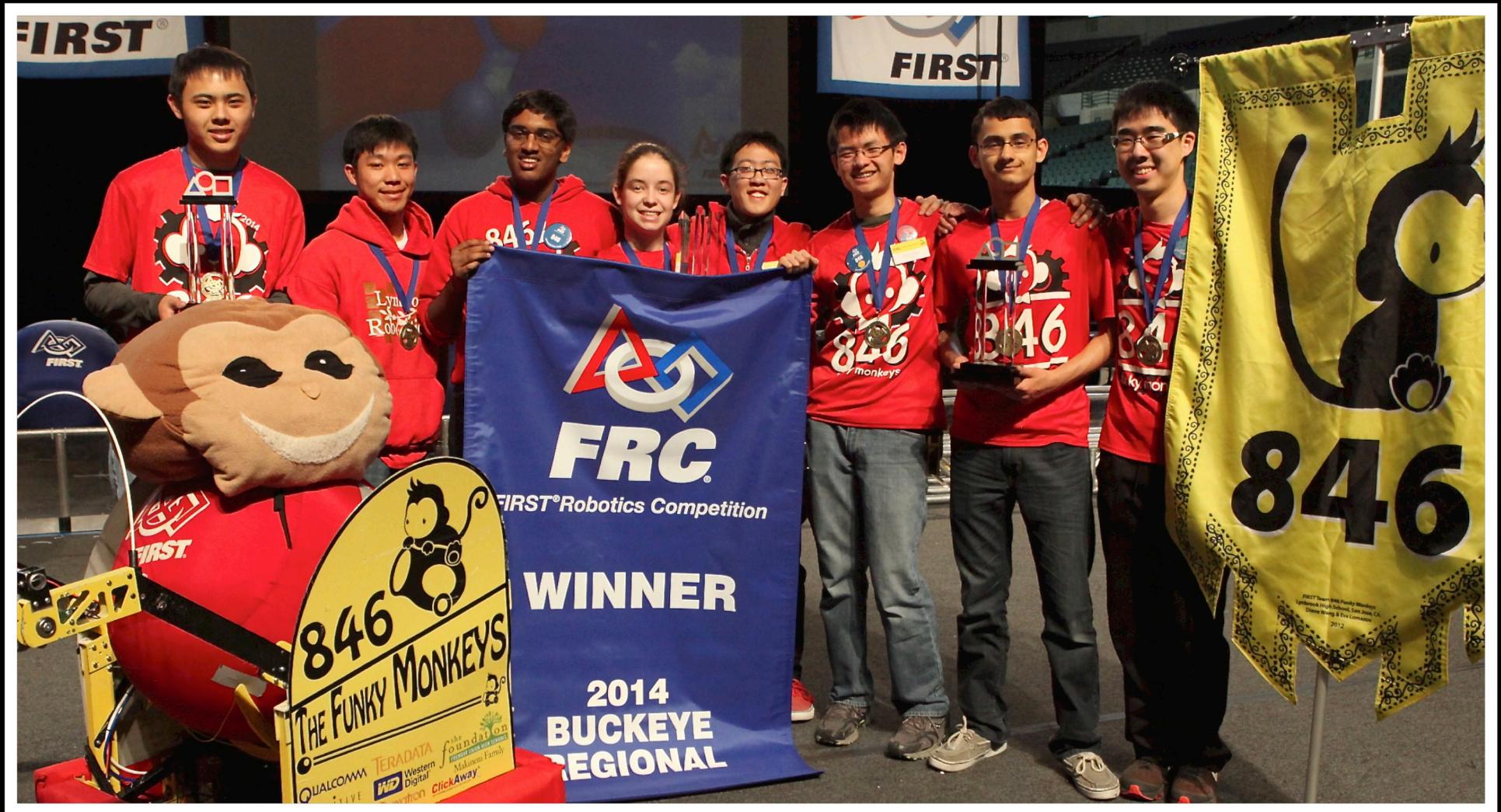
– FIRST World Championship

On the Field

Awards and Recognitions

The seniors proudly stand next to the team's first blue banner.

– Buckeye Regional, Cleveland, Ohio

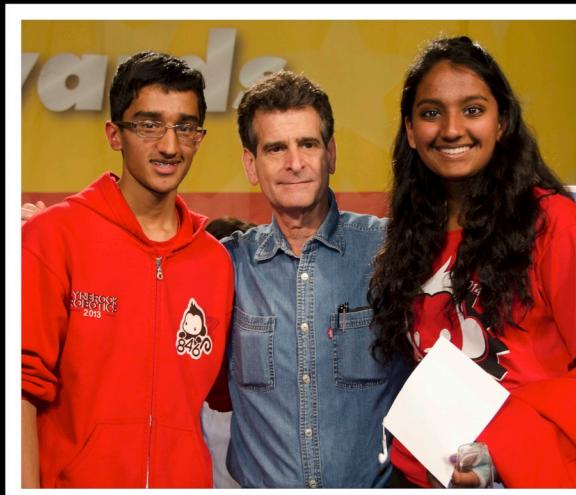


Our team shows off the WOW-Factor award.

– Madtown Throwdown Regional, 2013



Nikunj shows off the Entrepreneurship Award.
– WRRF's CalGames 2013



Rahul and Amrita with Dean Kamen.
– *Dean's List Ceremony,*
FIRST World Championship



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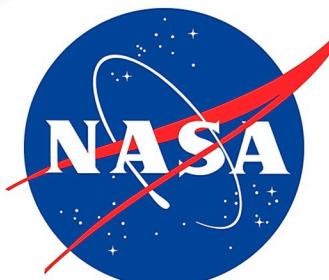
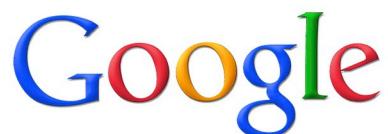


ABHISHEK JOHRI
Photographer

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Makineni Family



Perkins Grant