



Team  
**Neutrino**

**Annual Report 2016-2017**

# Mission Statement

The mission of Team Neutrino is to provide students with hands on STEM (Science, Technology, Engineering, and Math) experiences at the high school level that would not exist otherwise. The team acts as a real world application to supplement material learned in the classroom. Team Neutrino strives to create a robot that is competitive in the FIRST Robotics Competition and to maintain a positive and recognizable impact in the local community.





# Chairman's Essay

Once upon a time, there was a young princess growing up in Ames, Iowa.

While this may seem a strange setting for a fairytale, it's a beautiful start to Princess Alex's story of growth, opportunity, and friendship.

With a quote from Walt Disney: "When you believe in a thing, believe in it all the way, implicitly and unquestionably," we begin her story as she finishes 7th grade.

"It's up to you how far you'll go. If you don't try, you'll never know."- The Sword in the Stone

Alex's teacher encouraged her to start her STEM conquest through a Super Summer Camp to learn programming and circuitry. This was her first contact with FRC 3928 Team Neutrino. Little did she know her life would change forever. STEM entranced Alex; she could do magic—making the robot move—by typing on a computer! At first she hung back, scared she might break something, but the mentors encouraged her to keep trying.

The same mentors who led her through the camp encouraged her to join the FIRST empire. Conquering the 3928-led tryouts, our princess started her next stage of training as part of FLL. Alex aspired to one day be a member of 3928, knowing they'd be with her every step as a coach, mentor, supporter, and guide.

"Remember you're the one who can fill the world with sunshine."- Snow White

As our princess grew she became more enchanted by STEM. At age 14, she began her final stage of training: joining 3928. She participated in 3928-led offseason camps where "New-Trinos" practiced complex spells by learning FRC skills such as CAD, programming, wiring, communication, and graphic design. Fluidity between subteams was highly encouraged, and while Alex dabbled in the technical aspects of the team, she found herself especially entranced by mentoring and outreach.

Each a fairytale of their own, the stories Alex collected from just a season of mentoring confirmed she was hopelessly in love with the experience: FLL students who

thought about college for the first time, FLL Jr. students who didn't want to leave, and summer camp participants who finished saying they "want to grow up to be just like you." At every meeting, 3928 members guided teams through the magical lessons they'd developed. After their initial success, they provided these lessons to other FIRST teams starting FLL Jr. kingdoms.

Alex loved how much students enjoyed being part of FIRST and sought channels to share her passion with as many as possible. Her opportunity came as she accompanied the team to the American Solar Car Challenge and reached 14000+ people in one day. The public was amazed, many saying "I wish I was as well-spoken as you when I was a kid; this is great!" The best part of the experience was when 3928 gained a new member who hadn't heard about FIRST before.

Our princess also noticed the team's phenomenal relationship with the Science Center of Iowa (SCI). SCI continued to reach out to 3928 and invite them to participate in events such as its FLL regional, Robotics Day, and the Iowa Mini Maker Faire. Alex was overjoyed when she walked into an SCI event and heard the program director Colleen say, "Yay! It's Team Neutrino!"

The growth of Iowa's STEM realm was designed for student advancement, and 3928 reigned, instituting a FIRST progression of programs to successfully train new knights, diplomats, and scouts from kindergarten to graduation. Alex, like many other team members, continued to mentor and volunteer for the rest of her time on the team.

"The flower that blooms in adversity is the most beautiful of all."- Mulan

Although our princess remembers the magical moments of her first year, some friends from other kingdoms thought about giving up because they were told "STEM isn't for girls." She realized 3928's culture had been so supportive that she'd never experienced such a barrier and decided her next mission must be to extend 3928's powers to prevent such atrocities.

Building on the team's strong relationship with SCI, 3928 began teaching circuitry at the annual Girls in STEM event, giving hands on STEM experiences to 800+ girls year after year. 3928 also partnered with the Iowa State University (ISU) Program for Women in Science and Engineering to start a Girls Who Code club at AI-



ex's school to teach programming. The team founded Club Proton, 3928's all-girls FLL Jr. program, then expanded FLL Jr. over the next 2 years to 6 more schools.

She knew that, step by step, her endeavors would help battle existing challenges so that other princesses & princes would be better equipped to emerge victorious.

"Sometimes our strengths lie beneath the surface."- Moana

Our story continues as Alex began her sophomore year as the fundraising manager. She'd been nervous about applying but excited to grow; suddenly she was in charge of the \$30,000 needed to fund the team on their quest every year.

At first, the hands-off mentor attitude that let team members learn through failure had made her anxious, but she knew that mentors provided guidance and made sure students, the future STEM royalty, remained the driving force of the team.

Given her newfound reign over fundraising affairs, she showed an incredible amount of growth. Through outreach, networking, and public relations, shy, hesitant Alex flourished into a dazzling leader, radiating confidence.

"My dream wouldn't be complete without you."- Princess and the Frog

Our princess learned to maintain good relations with 3928's 17 sponsors and partners, regularly attending to these "fairy godmothers" by taking a legion of students alongside the robot to thank them for making the FRC quest possible. To her delight, new fairy godmothers such as Accurate Perforating Company reached out to Alex and asked to sponsor the team.

As build season rolled around, 3928 created weekly newsletters to keep the kingdom and benefactors updated. The fairy godmothers often commended the professionalism in 3928's regular communication and published resources like their business plan, identity standards, and SWOT analysis. At the end of each year, 3928 sent them testimonials of how the season inspired each member.

"Adventure is out there."- UP

3928 continued to foster Alex's enthusiasm for STEM by encouraging her to enroll

in tech classes. With over 2/3 of the team's upperclassmen, she took object-oriented programming at ISU, CAD and wood materials at the high school, interned at ISU, and even worked in the school district's tech department.

By her junior year, our princess became the co-captain—the non-technical team lead. When she went back to visit her teachers, they commented on how she was a changed person. They noted how articulate she was, how much greater her aspirations were, and how many new skills she'd developed, skills that her first grade teacher "only hoped [her] children could grow up to have."

"Don't just fly, soar."- Dumbo

As Alex completed her senior year, she reflected on the team's growth over the past 4 years. They'd become a kingdom with 8 camps, 2000+ hours of volunteering, and a reach to 140,000+ people annually. They'd started 27 new FIRST teams in 3 years and were supported by 17 sponsors and partners. It was a team of her best friends.

To ensure that the team would flourish after her graduation, 3928 reorganized so royal responsibilities would be delegated amongst members. To maintain such high standards, the team created a hierarchy of sub-teams overseen by a captain and co-captain. Detailed documents were created, fostering a smooth transition by providing guidelines to effectively run the kingdom. Thus, updating the team treasury, business plan, and published resources would be a simple process, keeping the kingdom in order.

Alex saw a surge in expansion: the team quadrupled in size. She thought back to her first year when her school was not well aware of 3928; now nearly every student was familiar with 3928's kingdom through recognition fueled by team members and support of the school staff.

As evidence of the team's growing visibility, our princess was overjoyed when a duchess of NASCAR, Taylor Lefebvre, contacted her about having a booth at its STEM weekend. Taylor excitedly told Alex she'd found 3928's website and that her whole department loved the team's values. This new event was an amazing experience, and Alex loved presenting to a new demographic.



Alex thought back to the Super Summer Camp she'd taken part in and realized how much 3928 involvement had grown. Previously volunteering for the programs, 3928 began to teach the classes Engineering .101 and Lego Mindstorms when the coordinator stepped down. They created lesson plans and hands-on challenges now public on their website. In addition, 3928 created the Maker Tech Camp: a fundraiser to maintain and update the Edwards Elementary MakerSpace, raising \$3600. The coordinator, Teresa, enthusiastically told the team, "Our parents LOVE it, the kids love it, they benefit so much from this camp and so do I!"

"Ohana means family and family means nobody gets left behind."- Lilo & Stitch

Alex fell in love with the team, her family, through long build season hours, mentoring teams, traveling to events, four-square-ping-pong-video-game-movie nights, team group chats that kept everyone up way too late, and surprise birthday parties.

As a senior graduating from the team, our princess was very sad. She wasn't sure if she would find another family she loved so much. Even so, because of her time on 3928, Alex knew she could now take on any challenge and be successful studying engineering alongside her teammates. She was never going to leave FIRST and would coach, mentor, and volunteer for the rest of her life.

During the end-of-season party, she was given a framed team photo from her last season. She found a slip of paper behind the frame.

It said:

"Around here we don't look backwards for very long. We keep moving forward, opening up new doors and doing new things, because we're curious...and curiosity keeps leading us down new paths.'- Walt Disney

We love you so much.

~Team Neutrino"

The End.

# 2015-2016 By the Numbers

#Volunteer  
**EVENTS**

**29**

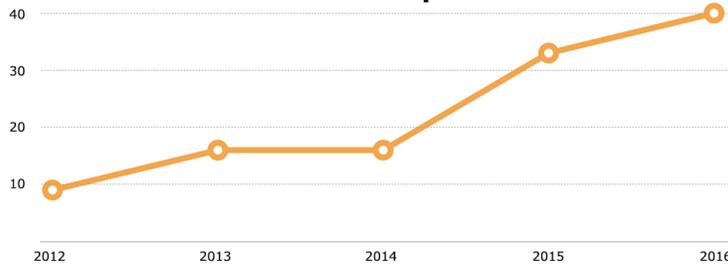
#Volunteer  
**HOURS**

**2600**

#FIRST Teams  
**MENTORED**

**14**

## Team Neutrino Membership



## Alumni Stats



FIRST post Neutrino (60%)  
No FIRST post Neutrino (40%)



STEM major (82%)  
Other major (18%)



Graduate high school (100%)  
Don't graduate (0%)

## Award History

### 2012 *Rebound Rumble*

Highest Rookie Seed  
@ Midwest

### 2013 *Ultimate Ascent*

Regional Finalists  
Excellence in Engineering  
@ Greater Kansas City

Regional Finalists  
Innovation in Control  
@ Minnesota North Star

### 2014 *Aerial Assist*

Engineering Inspiration  
@ Minnesota North Star

### 2015 *Recycle Rush*

Dean's List Finalist  
@ Minnesota North Star

### 2016 *FIRST Stronghold*

Judges' Award  
@ Minnesota North Star

# 2016-2017 Iowa FRC Teams

**167 Children of the Corn**  
Iowa City

**525 Swartdogs**  
Cedar Falls

**967 Iron Lions**  
Marion

**3928 Team Neutrino**  
Ames

**4646 Team ASAP**  
Des Moines Metro

**5041 CyBears**  
West Branch

**5576 Team Terminator**  
Spirit Lake

**5837 Unity4Tech**  
Waterloo

**5935 Tech Tigers**  
Grinnell

**6164 Moonshot Slaybots**  
Dike

**6317 Disruptive Innovation**  
Davenport

**6320 Iron Hawks**  
Manchester

**6371 Dead Robotics Society**  
Spencer

**6379 Terabyte of RAM**  
Pleasant Hill

**6412 For Sale By Owner**  
Cedar Rapids

**6419 ICE Agents of Scrum**  
West Des Moines

**6420 Fire Island Robotics**  
Muscatine

**6455 The Coded Collective**  
Waterloo

**6467 Tiger Robotics**  
Lenox

**6536 TheDarkSide**  
Vinton

**6630 F.U.N (FieRCely Uknighited Nation)**  
La Porte City



# 2016-2017 Events and Programs

## SEPTEMBER 2016

FLL Try-Outs Event\*

Science Center of Iowa's Robotics Night\*

Science Center of Iowa's Mini Maker Faire\*

WiSE 30th Anniversary STEM Festival\*

## OCTOBER 2016

FLL Mentoring Program\*

Cow Town ThrowDown

## NOVEMBER 2016

FLL Mentoring Program\*

FLL Jr. Mentoring Program\*

Edwards Elementary Science Night\*

## DECEMBER 2016

FLL Mentoring Program\*

FLL Jr. Mentoring Program\*

Marshalltown FLL Regional Volunteering\*

Science Center of Iowa FLL Regional Volunteering\*



## JANUARY 2017

FLL Jr. Mentoring Program\*

FRC Kickoff

Iowa State FLL Championship Volunteering\*

## FEBRUARY 2017

FLL Jr. Mentoring Program\*

SCI's Girls in Science Festival\*

Iowa FRC Scrimmage

Robot Reveal\*

Iowa 4-H Gala\*

## MARCH 2017

FLL Jr. Mentoring Program\*

Iowa Regional

## APRIL 2017

FLL Jr. Mentoring Program\*

Minnesota North Star Regional

\* *signifies outreach event*



# Team Roster

## LEADERSHIP

Tony Milosch . . . . .	Lead Mentor
Evan Williams . . . . .	Captain
Rucha Kelkar . . . . .	Co-Captain
Joel Neppel . . . . .	Safety Captain
Benjamin Steward . . . . .	CAD Manager
Logan Peters . . . . .	Programming Manager
Nicole Essner . . . . .	Mechanical Manager
Woo Young Joo . . . . .	Scouting Manager
Tianxin Xu . . . . .	Electrical and Outreach Manager
Nathan Paskach . . . . .	Image Manager
Hana Lee . . . . .	Mentoring Manager
Moriah Conner . . . . .	Fundraising Manager



## MEMBERS

Makenzee Bellamy . . . . .FR	Aravind Narayanabhatla. . . . .JR
Andres Cordoba . . . . .FR	Luke Dirks . . . . .JR
Steve Frana . . . . .FR	Nicole Essner . . . . .JR
Nitzan Friedberg . . . . .FR	Michael Holm . . . . .JR
Erik Nelson. . . . .FR	Rucha Kelkar . . . . .JR
Sayre Satterwhite. . . . .FR	Hallie Lartius . . . . .JR
Simeon Steward . . . . .FR	Nathan Paskach . . . . .JR
Abdullah Al-Ani. . . . .SO	Benjamin Steward . . . . .JR
Riley Bremer . . . . .SO	Tianxin Xu . . . . .JR
Moriah Conner . . . . .SO	Hugo Alvarez . . . . .SR
Helen Hu . . . . .SO	James Beetham . . . . .SR
Hana Lee . . . . .SO	Woo Young Joo . . . . .SR
Joel Neppel . . . . .SO	Logan Peters . . . . .SR
Jacob Preston . . . . .SO	Rebekah Stammer . . . . .SR
Preston Witte . . . . .SO	Evan Williams. . . . .SR
Obi Agba . . . . .JR	

## MENTORS

Evan Derse . . . . .ISU Junior	Michael Olson . . . . Interstate Batteries
Mark Duthie . . . . .ISU Sophomore	David Runneals . . . . .Student
Nick Hasto . . . . .ISU Senior	Rose Stammer. . . . .Parent
Erin Mitchell . . . . .ISU Junior	Brian Steward . . . . .Parent
Tony Milosch . . . . .John Deere	Stacia Steward . . . . .Parent
Jeanne Paskach . . . . .Parent	Taylor Tuel . . . . .ISU Grad Student

# 2016-2017 Sponsors

## DIAMOND SPONSORS

John Deere

Danfoss

Monsanto Fund

## PLATINUM SPONSORS

CIT Signature Transportation

Quality Manufacturing Corporation

Interstate All Battery Center

## GOLD SPONSORS

Iowa 4-H Foundation

City of Ames Electric Services

## SILVER SPONSORS

Emerson

## HONORABLE MENTION

### SPONSORS

Jimmy John's

Meier Bernstein Arts in STEM Project

Thrivent Financial

Accurate Perforating Company

## OPERATIONS PARTNERS

Story County 4-H

Boyd Lab

Iowa State University College of Engineering