FRC Judging:
Maximizing Time and Content

Kristin Weiss

971 SPARTAN ROBOTICS

About Me

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You Be The Judge

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Outreach Award

Team 1:

We have a very diverse team with students from all different backgrounds. We are very passionate about outreach and attend several school STEM nights and community demos every year. We partner with local companies who provide us with funding and donations, and in return we do robot demos for their employees and invite them to our end of year banquet. In the past few years we have started several FLL and FRC teams and our teams members volunteer at the local FRC regional each year.

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Team 2:

Our team includes students from all four grade levels and has a 42% female representation. We place a large emphasis on outreach, attending 7 school STEM nights and 12 community demos each year, impacting over 1,500 individuals annually. We currently partner with 5 local companies who provide us with $20,000 in funding and in-kind donations, and in return we do robot demos for their employees and invite them to our end of year banquet. In the past 5 years we have started 10 FLL and 3 FRC teams and 15 of our teams members volunteer at the local FRC regional each year.

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Team 1:

- Diverse
- STEM nights
- Community demos
- Local companies
- Funding & in-kind donations
- Robot demos
- End of year banquet
- Past few years started several FLL & FRC teams
- Volunteer at FRC regional

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- Volunteer at FRC regional

Team 2:

- 4 grade levels
- 42% female
- 7 STEM nights
- 12 community demos
- Impact 1,500 individuals
- 5 local companies
- $20,000 in funding & in-kind donations
- Robot demos
- End of year banquet
- Past 5 year started 10 FLL & 3 FRC teams
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Robot Award

Team 1:

This season our team decided we wanted to be able to do everything as quickly and simply as possible. In order to do that, our robot has a two-stage, continuous elevator to be able to reach all three levels of the rocket, along with a dual intake to manipulate both cargo and hatch panels with the same mechanism. We use 2 Limelight cameras to autoscore at any point during the match. We use a proximity sensor to know when the robot has acquired a game piece and PID loops to control both our elevator and drive train.

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Team 2:

We decided we wanted to be able to do everything as quickly and simply as possible. Our robot has a two-stage, continuous elevator with springs to offset the weight of the carriage. We designed a dual intake, to manipulate both cargo and hatch panels with the same mechanism, that we mounted on gas shocks to allow us to ram into the field elements and make sure we are securely scoring game pieces while not damaging the robot. We have 2 Limelight cameras so that we can see the field no matter what position our elevator is in, which lets us auto-score at any point during the game. We use a proximity sensor and current monitoring to know when the robot has acquired a game piece, PID loops to control both our elevator and drive train, and a limit switch to home our elevator.

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Team 1:

- Do everything
- Two stage, continuous elevator
- All three levels of rocket
- Dual intake
- 2 Limelights
- Autoscore at any point in match
- Proximity sensor for game piece acquisition
- PID on elevator and drive train

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Team 2:

- Do everything
- Two stage, continuous elevator
- Springs to offset weight of carriage
- Dual intake
- Mounted on gas shocks
- 2 Limelights
- Autoscore at any point in match
- Proximity sensor/ current monitoring for game piece acquisition
- PID on elevator and drive train
- Limit switch to home elevator

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- Proximity se...or/ current monitoring for game piece ac...
- PID c... drive train
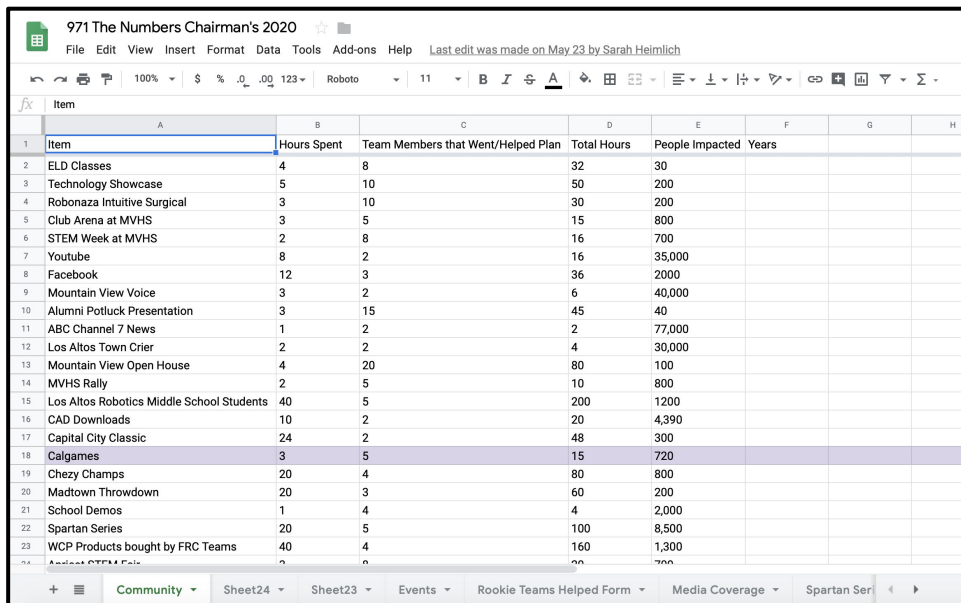- Limit ... elevator

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Tips and Tricks

Judges

- Volunteers
- Industry professionals
- Some alumni
- Some new to FIRST
- Interview ~15 teams/ day
- Human beings

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Numbers Are Good!

- Team demographics
- # Events
- # Attendees
- Team member hours
- Mentor hours
- # Team members
- # Mentors
- # Sponsors
- Sponsor $ donations

971 The Numbers Chairman's 2020

File Edit View Insert Format Data Tools Add-ons Help   Last edit was made on May 23 by Sarah Heimlich

Item

	A	B	C	D	E	F	G	H
1	Item	Hours Spent	Team Members that Went/Helped Plan	Total Hours	People Impacted	Years		
2	ELD Classes	4	8	32	30			
3	Technology Showcase	5	10	50	200			
4	Robonaza Intuitive Surgical	3	10	30	200			
5	Club Arena at MVHS	3	5	15	800			
6	STEM Week at MVHS	2	8	16	700			
7	Youtube	8	2	16	35,000			
8	Facebook	12	3	36	2000			
9	Mountain View Voice	3	2	6	40,000			
10	Alumni Potluck Presentation	3	15	45	40			
11	ABC Channel 7 News	1	2	2	77,000			
12	Los Altos Town Crier	2	2	4	30,000			
13	Mountain View Open House	4	20	80	100			
14	MVHS Rally	2	5	10	800			
15	Los Altos Robotics Middle School Students	40	5	200	1200			
16	CAD Downloads	10	2	20	4,390			
17	Capital City Classic	24	2	48	300			
18	Calgames	3	5	15	720			
19	Chezy Champs	20	4	80	800			
20	Madtown Throwdown	20	3	60	200			
21	School Demos	1	4	4	2,000			
22	Spartan Series	20	5	100	8,500			
23	WCP Products bought by FRC Teams	40	4	160	1,300			
24	Apricot STEM Fair				700			

Community Sheet24 Sheet23 Events Rookie Teams Helped Form Media Coverage Spartan Ser

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Award Criteria

Creativity Award *Sponsored by Xerox*

Description

Celebrates creativity in design, use of component, or strategy of play.

Guidelines

- A team spokesperson must be able to competently describe the creative/unique feature(s) and can trace its conception, design, manufacturing/assembly, or deployment.
- It is highly original in concept or execution.
- Since creativity may involve risk of failure, a team's appropriate response to challenges, including machine failures, can be considered.
- Its uniqueness has a practical application and contributes to the objectives of the competition.
- Developing it contributed to the team's success in *FIRST* – not just in performance on the field of competition.
- The team created this device/strategy rather than discovered it once the machine was built.

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Pit Interviews

- Designate 2+ students
    - Machine
    - Team Attribute
- Keep answers short and to the point
    - "I can expand on this more if you would like"
    - 1 student answers, max 1 student adds on
- Have 2 versions
    - "Dumbed down"
    - Fully technical
- Focus on what makes you unique
    - DETAILS
- You can ask judges to come back if busy

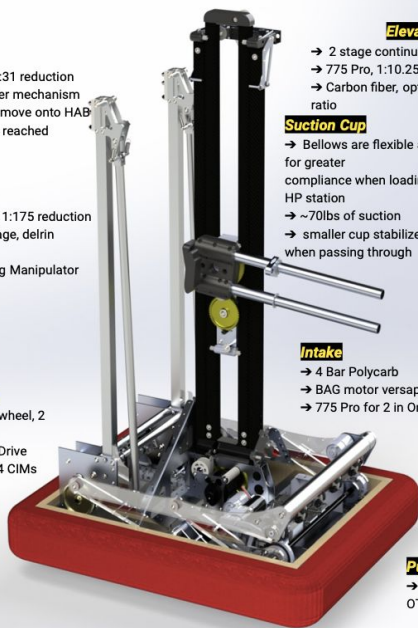971
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Handouts

971 Robot Overview

Stilts
→ 775 Pro 1:31 reduction
→ Over center mechanism
→ passively move onto HAB After height reached

Wrist
→ BAG Motor, 1:175 reduction
→ Onyx Carriage, delrin bearings
→ Telescoping Manipulator

Drivetrain
→ 4 Colson wheel, 2 tread
   wheel tank Drive
→ 16.4 ft/s 4 CIMs

Elevator
→ 2 stage continuous rigged
→ 775 Pro, 1:10.25 reduction
→ Carbon fiber, optimized l/d ratio

Suction Cup
→ Bellows are flexible and allow for greater compliance when loading from the HP station
→ ~70lbs of suction
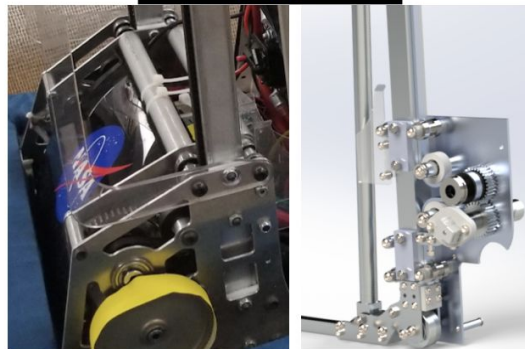→ smaller cup stabilize hatch panel when passing through

Intake
→ 4 Bar Polycarb
→ BAG motor versaplanetary
→ 775 Pro for 2 in Omnis

Pump
→ 775 pro on a OTS pump

Subsystems

Stilts

- Powered by 1 775 Pro 1:31 reduction
- Over center spring mechanism keep's the feet in place until the stilts reach the top
- "Ankles" break and robot moves onto HAB 3
- Wheels on 1 way bearings prevent slipping, roll robot onto the platform
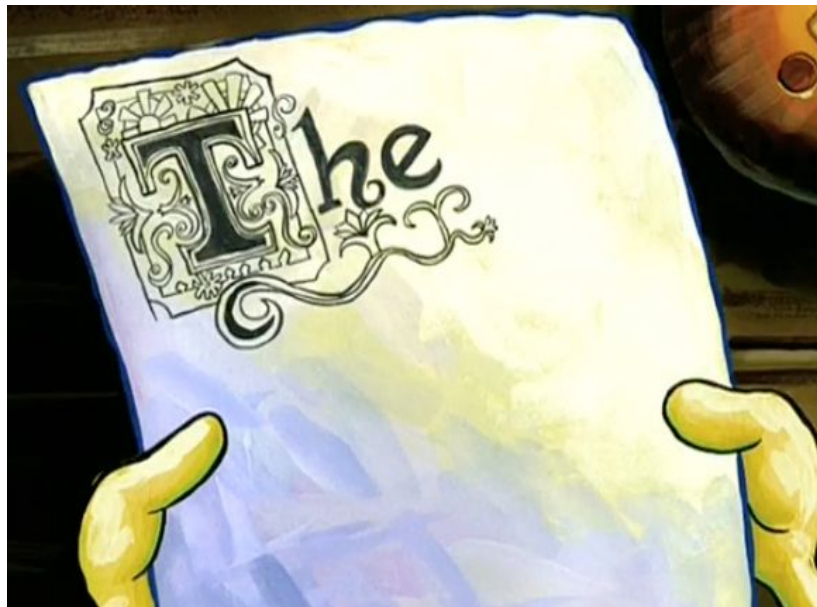- Stilts retract and we drive onto the platform

971 Technical Documentation 2019

7

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Essays

- Have a theme or message
  - Team mission statement
- Create an outline
- Have team read-aloud
- 2 outside reviewers
  - Grammar/ spelling
  - Big picture
- Utilize Google Docs
  - Don't abuse it

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1. Team
   a. History
      i. How we were founded
      ii. How we have grown since
   b. Demographics
      i. Genders
      ii. Grades
      iii. Background
2. FIRST
   a. Teams started
      i. FRC
   b. Teams mentored
      i. FLL
      ii. FRC
   c. Resources
      i. CD posts
      ii. How-to guides
   d. Events
      i. FLL qualifier
      ii. Offseason event
3. Community Outreach
   a. Sponsors
      i. Monetary donations
      ii. In-kind donations
      iii. How we say thank-you
   b. School STEM nights
      i. # per year
      ii. # people in attendance
   c. Public events
      i. # per year
      ii. # people in attendance
   d. Social media
      i. Platforms
      ii. Engagement

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Presentation

- Expand on highlights from essay
- Limit words
- Use pictures and figures
- Practice, practice, practice
- Confidence is KEY

BRIEF HISTORY

Fernbank LINKS was started in 2002 by five Lakeside High School who had one interest, one outreach program, and one goal: to have fun.

2002

2002 - Team America Rocketry Competition
2003 - SNO created
2003 - first FLL team founded
2003 - motto created
"Building Robots, Developing Minds, and Changing Lives"

Original five LINKSters in 2002

2019

- FRC team #4468
- 200,000 students impacted
- 21 unique outreach events
- 29 students

Current LINKSters in 2019

41% ♀   48% POC

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In Summary...

- Judges are humans
- Numbers are your friend
- Read the award criteria
- Make yourself stand out in the pit interviews
- Have a plan before you write your essay
- Keep presentations visual
- Be confident
- Make the judges fall in love with you

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Thank You!