

BEHIND THE 2020
ROBOTS

Behind the 2020 Robots

By Adrienne Emerson (148), Brandon Holley (125),
Lucien Junkin (118), Nathan M (1678)

Moderator: Richard McCann (1678)

FALL WORKSHOPS

BEHIND THE 2020 ROBOTS

Richard McCann

- *Moderator*
- 1678 Strategy Mentor since 2012 as well as Business & Media
- Capital City Classic MC (when we play)
- Sacramento Regional Media Coordinator
- Economist on energy, water & environmental planning & regulation

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Today's Workshop

- Focus on 2020 robots and competition
- Other related workshops will highlight:
 - *Analyzing a Game: The Whats of Kickoff* at 1 pm Saturday,
 - *Strategic Design* at 1 pm Sunday
 - *Simple Robots That Win* at 3 pm Sunday
- Short presentations, then Q&A from the Q&A chat box
- Who's here today?

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2020 Woody Flowers
Award
Lucien Junkin of 118



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Lucien Junkin - 118

- Robonauts Head Coach
- NASA Robotics Alliance Project Program Lead
- NASA Space Exploration Vehicle & Lunar Terrain Vehicle Chief Engineer



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Adrienne Emerson - 148

- District Robotics Director, Greenville ISD
- FRC 148 2010-Present, Alumni 191 & 229
- Event Coordinator FIT Greenville District
- Woodie Flowers Finalist Award, Dallas 2016

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Brandon Holley - 125

- NUTRONS Head Coach
- Product Creation Leader, Sonos Inc.
- 5 year FRC Participant (FRC11), 15 year FRC Mentor (FRC125)
- Greater Boston District Event Chair, Boston Local Kickoff Coordinator
- Co-Dog Parent to Pasta & Pesto



FALL WORKSHOPS

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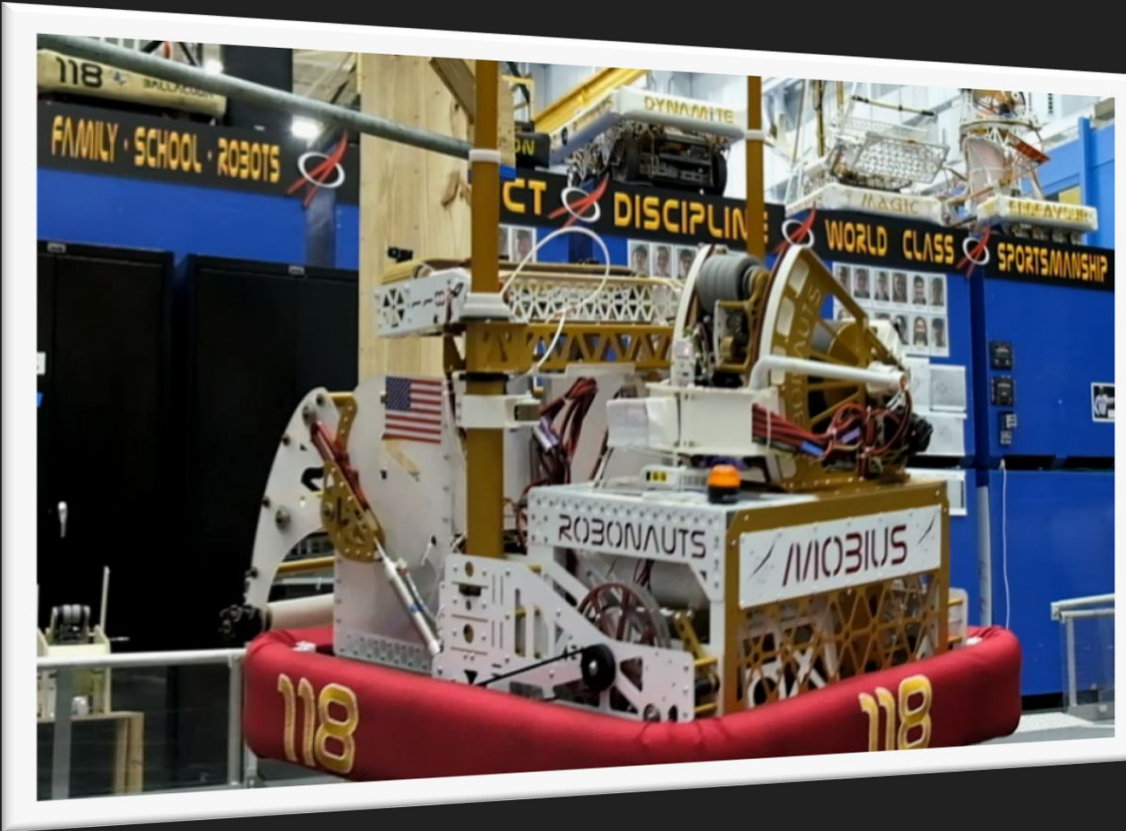
Nathan McAllister - 1678

- High School Senior, 4th year of FRC
- Design Lead (2nd year)
- Robot Operator (3rd year)

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118 - Mobius

BEHIND THE 2020 ROBOTS



2020 ROBNAUTS ROBOT WILL

GENERAL

BE ROBUST!

- Be 4/10 lbs
- Have CG symmetry
- Track vision targets
- Track # of balls in robot (up to 5)
- Have driver feedback lights
- Have camera feed
- Accurately operate what vision (shooter/position pre-set)

MOBILITY

- Be fast and agile
- Drive fast over rendezvous point
- Drive underneath the control panel
- Play defense

AUTON

- Pick up all 5 balls in Trench Zone
- Intake balls from rendezvous point (off boundaries)
- Accept balls from other alliance members (off floor)
- Score balls in inner port

POWER CELLS (BALLS)

- Intake balls from ground + rendezvous point
- Intake multiple balls simultaneously
- Hold 5 balls
- Shoot in all directions (independent of base)
- Score 5 balls quickly
- Score in all 3 ports
- Score from:
 - "Target Zone" (protected)
 - Control Panel
 - Fair side of field
 - Near side of field (strive for)

CONTROL PANEL (SPINNER)

- Do rotation control
- Do position control

GENERATOR SWITCH (HANG)

- Have an active lever
- Grabs handle at all angle levels
- Solo hang
- Have a double hang

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EveryBot - 118EveryBot.org

The 2020 Robonauts' Everybot Robot Will

- Feed a partner its preloads during autonomous
- Leave the Initiation Line during autonomous
- Drive over the Boundaries
- Pick up and hold 5 power cells
- Score power cells in the bottom port
- Play defense
- Hang from the Generator Switch



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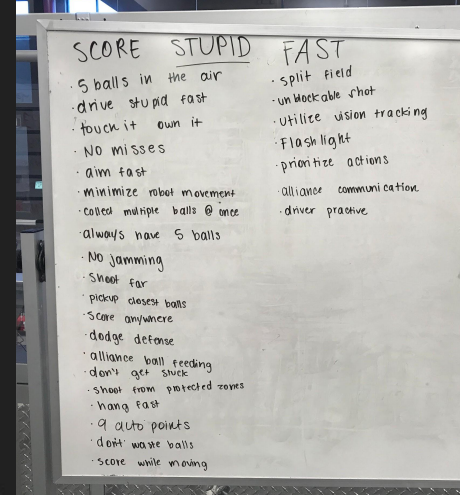
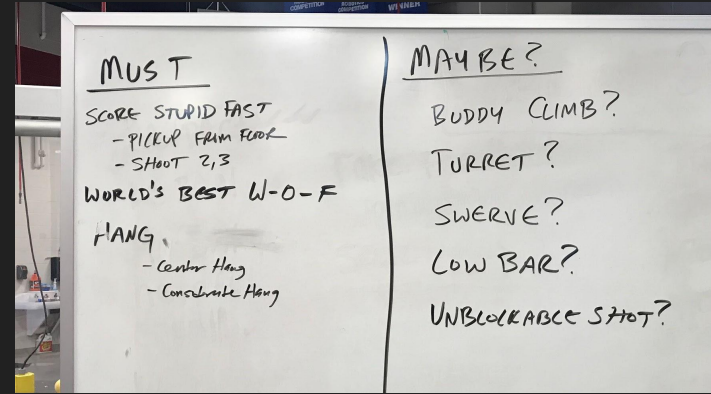


Need	Want	Nice To Have
General Characteristics		
Weight target = 110lb or less		Play D
Design specifically for low CG		Score Low
"Cruise" over rendez-vous		***Drive under control panel***
Shove....hard....		
Keep balls in robot, keep balls out of robot out		
Game Pieces/Scoring		
Hold 5 balls	Pick up balls from hp direct	
Pick up balls from ground		
Track vision target from 0 to 50ft		
Score from variable distance (0-20ft, 35-40ft)		
Score Inner (80% from front zone)		
Score Outer (90% from downtown)		
Score over defender		
Clear loading station in <30 seconds		
Auto		
8 ball auto from Left (steal 2, shoot, grab 3, shoot)		
8 ball auto from Right (grab 2, shoot, grab 3, shoot)		
Pick up 2 balls wide for auton		
Color Wheel		
	Rotate Contol Panel	
	Select Color on control panel	
Switch/End Game		
Grab bar in any position	Bring a robot up with us	Change bar balance while climbed
Climb dead center		
Climb from either approach		

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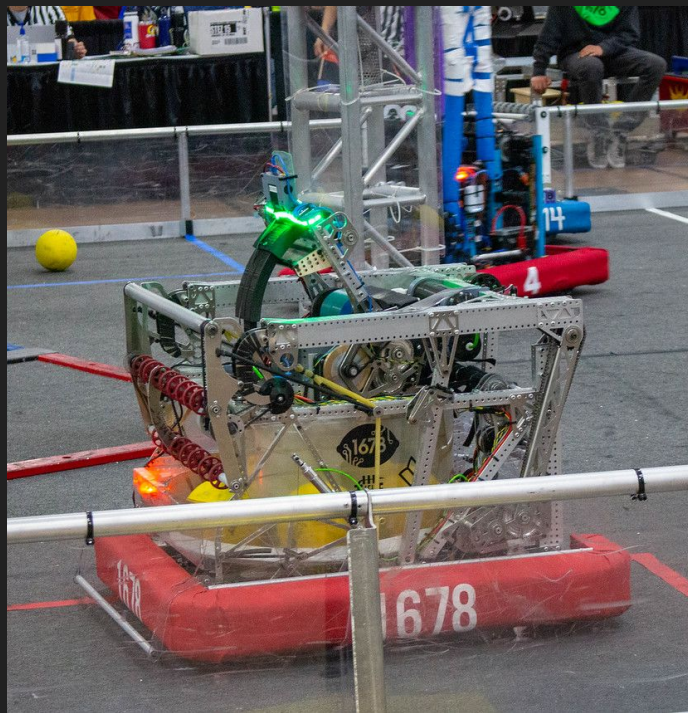
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1678



What will 1678 do?

	<u>General</u>	<u>Offense</u>	<u>Endgame</u>
RP	- Drive	- Ground intake power cells from the carpet and the rendezvous bar	- Park in the rendezvous point
RP	- Drive across the rendezvous point	- Store five power cells	- Hang solo and be level
	- Not get beached on a power cell	- Shoot into the outer port from: <ul style="list-style-type: none">- the entire trench run (4-6)- the open field (3)- the opponent loading zone (2)- point blank (1)	- Lift one buddy and be level
	- Not fit under the control panel	- Have a high power cell exit point	- Solo hang with one or two other solo hang
	<u>Auto</u>	- Achieve rotation and position control	
	- Leave initiation line		
	- Shoot power cells into the inner port		
	- Multiple auto routines <ul style="list-style-type: none">- up to 10 power cells in the inner port		
		YET TO PROTOTYPE	
		- Reach rung at any height	
		- Shoot into the inner port from the trench run	

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Questions?

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