



BUGGY ALUMNI ASSOCIATION

2018 Raceday Preview

Welcome to the 2018 Raceday Preview! We at the BAA are excited to get on the hills and see what our teams have to offer. As a thanks for your generous donation, enjoy this Raceday Preview, full of exclusive insider information. Thank you for being a member of Buggy Alumni Association and financially supporting us in our mission to further the sport we all love and keep coming back for! If you're interested in helping us out during Carnival, volunteering information can be found here.

An unseasonably cold spring, with rolls snowed out as late as April 7th, has made predicting a little more interesting this year. Recent history has indicated that SDC will probably prevail, while other teams are stuck battling it out for second. However, it has not been without controversy, and with very even freeroll speeds this year the possibility is there more than ever for every team. Even then, last year's second through fifth place teams were only separated by 2.2 seconds, so the other trophy places will be hotly contested. In addition, the buggy landscape has reshaped itself a bit - for example, longtime buggy stalwart SigNu will only be racing as an exhibition.

While the Men's races have had a clear winner for a few years now, the Women's seemed to have a little more parity before last year. However, the dominating performance of SDC A indicates that perhaps the women may have developed a similar model and we'll be looking again to the battle for second. We are enjoying the equality of having ten Women's teams to promote to second day, and we can always hope for continued enthusiastic competition.

Another thing to be excited about is the continued progress of autonomous teams. Robobuggy debuted a new buggy (NAND) and also continues to make progress with Transistor. Apex continues to experiment, and we can hope to one day have an entire Autonomous division.

As ever, we here at the BAA have been hard at work promoting buggy and building our team. We welcomed a new treasurer (Bryan Arsham) and a new webmaster (Krishan Taylor), and they've been a dynamic addition to the organization. Additionally, we would not be able to do our work without the amazing community we are built on, and for that we can't thank you enough.

Thanks so much for reading and donating! See you on the course!

-The Buggy Alumni Association

cmubuggy.org

Carnival 2018 Schedule of Events

Wednesday April 18, 2018

7:00 pm-7:30 pm: WRCT Pre-broadcast

Tune in to hear current students and locals share their predictions for this year's races, listen locally on 88.3 FM or online via wrct.org.

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Thursday April 19, 2018

12:00pm-2:00pm: Buggy Showcase

(UC Wiegand Gymnasium)

Teams will present all their competing buggies and some exciting historical examples. Come vote for people's choice and learn about buggy design

12:30 pm: Buggy Myths and Legends Panel

(UC Wiegand Gymnasium)

Taking a page from the Carnival theme this year, a group of panelists across the generations will share their own buggy myths and legends during Design Showcase.

7:30pm: BAA Happy Hour @ Fuel & Fuddle

(212 Oakland Ave, Pittsburgh, PA 15213)

This year, our Welcome Back Happy Hour is moving to Fuel and Fuddle, the newest bar with a buggy! Come hang out with other early arrivals and share your Raceday 2018 predictions.

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Friday April 20, 18

7:55am-12:30pm: Sweepstakes Preliminary Races

(Schenley Park Course)

Stop by the Alumni tent for some coffee and donuts, and swing by the BAA tent for your member patch and Raceday Spotters Guide!

1:30pm: Tom's History of Buggy Talk

(UC Danforth Conference Room)

Our regular, can't miss, event is back as Tom Wood shares a history of buggy focused on the class of '93 & '68.

7:30pm: BAA Meet-Up @ Hough's

(FINALS Lead Truck Auction!)

(563 Greenfield Ave, Pittsburgh, PA 15207)

For the first time ever, bid live on the finals heats' lead truck rides after the heats have been decided, and stick around to share your Raceday experiences at Hough's taproom, the original bar with a buggy!

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Saturday April 21, 2018

8:30am-12:00pm: Finals!

4:00pm: Awards at Midway Stage

See you on the hills.

2017 Raceday Results

Men's Heats

	Team	Time	Buggy	
1	SDC A	2:02.160	Malice	New Record!
2	PiKA A	2:08.420	Banshee	
3	SigEp A	2:09.240	Kraken	
4	Spirit A	2:09.330	Kingpin	
5	CIA A	2:10.660	Equinox	
6	SDC B	2:12.400	Bane	
7	Fringe A	2:13.300	Boson	
8	PiKA B	2:14.360	Cliodhna	
9	SDC C	2:19.250	Avarice	
10	CIA B	2:15.300	Tempest	DQ: Drops
11	SAE A	2:19.520	Lucy	
12	Apex A	2:19.930	Firefly	
13	CIA C	2:21.300	Orca	
14	Fringe B	2:21.580	Blueshift	
15	PiKA C	2:22.750	Raptor	DQ: DNS
16	Spirit B	2:23.010	Zuke	
17	Fringe C	2:23.010	Bissa	
18	SigEp C	2:23.370	Beyonce	
19	SDC D	2:23.650	Havoc	
20	Spirit C	2:24.470	Inviscid	
21	Apex B	2:24.880	Phoenix	
22	PhiDelt A	2:26.030	Argo	
23	SigNu A	2:27.560	Bungarus Krait	
24	Fringe D	2:29.030	Beacon	
25	CIA D	2:43.770	Emperor	
26	Apex C	2:44.830	Ember	
	SigEp B	2:16.940	Barracuda	DQ: Drops
	Robobuggy	3:18.900		

Women's Heats

	Team	Time	Buggy	
1	SDC A	2:23.270	Malice	New Record!
2	SDC B	2:32.800	Bane	
3	PiKA A	2:33.240	Banshee	
4	CIA A	2:34.780	Equinox	
5	Fringe A	2:38.060	Blueshift	
6	Fringe B	2:41.820	Boson	
7	SDC C	2:42.320	Avarice	
8	SigEp A	2:43.470	Kraken	
9	Apex A	2:48.980	Firefly	
10	Fringe C	2:56.050	Bissa	
11	Apex C	2:56.140	Phoenix	
12	PhiDelt A	3:04.500	Argo	
13	SigEp B	2:56.920	Beyonce	DQ: Pushbar
14	Fringe D	3:09.310	Bolt	
15	CIA C	3:16.340	Orca	
16	CIA D	3:18.750	Impulse	
17	SAE A	3:43.470	Lucy	
	CIA B	2:46.010	Tempest	DQ: Drops
	Apex B	2:52.380	Ember	DQ: Drops
	SDC D	2:55.490	Rage	DQ: 5 Second
	Spirit A		Kingpin	DNF: Spin
	Spirit B		Zuke	DNS

The above information represents the best time from each team including finals heats and rerolls.

Lead Truck Auctions

As in previous years, the BAA is auctioning off lead truck spots for the races. However, we've added a couple of new wrinkles: live auctioning of the finals heats at a new Friday meetup, and the addition of some unique experiences where you can be a commentator for a prelim heat, or a starter for an exhibition or autonomous heat!



Live auctioning of the finals heats will mean that you can choose the heat you're most interested in watching - no more getting stuck watching a matchup you don't care about! Join us at Hough's at 7:30 pm on Friday night to bid on the heats you want to see up close and personal. If you can't make it to Hough's, we have a proxy voting system set up; for more details, see here:

<https://cmubuggy.org/news/2018/04/2018-lead-truck-auction-auction-details/>

The prelims auctions can be found here: <https://cmubuggy.org/auction> and will be running through Wednesday night at 11pm EDT.

Preliminary Heat Schedule

Time	Heat #	Lane 1	Lane 2	Lane 3	Time	Heat #	Lane 1	Lane 2	Lane 3
8:05 AM	Timing	Atlas			10:20 AM	Heat 1	Apex C	SigEp D	
8:20 AM	Heat 1	Apex A	Fringe D		10:30 AM	Heat 2	Fringe B	PhiDelt A	
8:30 AM	Heat 2	CIA B	CIA C	SigEp C	10:40 AM	Heat 3	Apex A	SDC D	
8:40 AM	Heat 3	Spirit B	PIKA B		10:50 AM	Heat 4	SigEp B		Fringe D
8:50 AM	Heat 4	SigEp A	CIA D		11:00 AM	Heat 5	CIA B	SAE A	
9:00 AM	Heat 5	Fringe A	PhiDelt A		11:10 AM	Heat 6	PIKA B	CIA D	
9:10 AM	Heat 6	PIKA A	SDC D	Apex C	11:20 AM	Heat 7	Fringe A	Spirit C	Apex D
9:20 AM	Heat 7	Spirit A	SAE A	Fringe C	11:30 AM	Heat 8	SDC B	SigEp C	
9:30 AM	Heat 8	SDC B	Apex B		11:40 AM	Heat 9	Spirit A	Apex B	Fringe C
9:40 AM	Heat 9	CIA A	SigEp B		11:50 AM	Heat 10	SigEp A	CIA C	SDC C
9:50 AM	Heat 10	SDC A	Apex D	Fringe B	12:00 PM	Heat 11	PIKA A		Spirit B
10:00 AM	Robotic	RoboBuggy			12:10 PM	Heat 12	SDC A	CIA A	

APEX

Best result of last 5: Men 6th (2015), Women 9th (2017)
Org records: Men 02:19.3 (2017), Women 02:47.57(2017)



Apex started off the fall rolls season with a chute spin on the first weekend of rolls due to hitting the grate in the chute, losing the hatch, and braking hard. However, the driver controlled the spin and didn't contact anything, and was allowed to finish the roll. Otherwise, their rolls in the autumn progressed uneventfully with just some hatch losses. We hope they use extra duct tape on Raceday.

More excitingly, Apex produced a new reverse trike buggy at the end of March. Its bright foil wrappings earned it the nickname "HotBakedPotatoBuggy". Although it had a promising first roll, the new buggy broke its steering on April 8th and made a hard turn into the curb, crumpling the nose about six inches. However, some feverish work was done by the Apex mechanics (good job!) and HotPotato (properly named Azula) will be out on Raceday. Ember continues to roll, although it experienced some mechanical issues and unexplained stops in the spring season.

2017 Best Time:

Men's: 2:19.93

Women's: 2:48.98

Azula - 2018



Firefly - 2017



Ember - 2014



Samantha Wong - A Team (Mens)
B Team (Womens)

Ariana Mapua* - A Team (Womens)
B Team (Men's)

Bethany Bauer* - C Team (Mens)
D Team (Womens)

Phoenix - 2012



Vicki Wang* - C Team (Women's)
D Team (Men's)

* - Indicates new driver.



CIA started off the year with a bang, figuratively by doing full Hill 2s on the first day of rolls, and literally, as Impulse and Icarus were a little noisier than usual during their first appearance of the year on the course. During the second weekend in the fall, Orca spun due to steering issues, going head on to the hay and catching the outrigger between the bales. Some major repairs were required (Orca has yet to be seen on the course again), but the driver was ok. During Parents Weekend, CIA fielded some unusually old pushers, but they seem to have paid... well, someone's activity fee. During the same weekend, Icarus had a minor chute-bale incident, but no major damage occurred. On a logistics front, throughout the fall CIA suffered follow car availability problems, and resorted at least once to using a ZipCar. Although they weren't the fastest on Mini-Raceday, CIA managed to get Emperor rolling very quickly with a new driver, and it's a combination to watch on Raceday.

In the spring, Emperor debuted a new, 80s-tastic spandex paint job. On Truck Weekend, they had a spin as a result of a tight chute turn, possibly because they mimicked Raceday conditions by rolling two buggies at a time, racing them up the front hills. Otherwise, CIA rolled in the uneventful fashion that we generally expect from them during an otherwise turbulent spring.

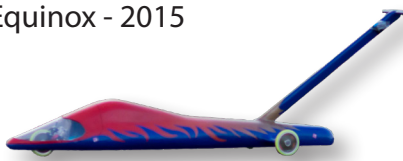
2017 Best Time:
Men's: 2:10.66
Women's: 2:34.78

Emperor - 2017



Rachel Motz* - A Team (Women's)
B Team (Men's)

Equinox - 2015



Emily Wong - A Team (Men's)
B Team (Women's)

Tempest- 2016



Kady Yip - C Team

Impulse - 2013



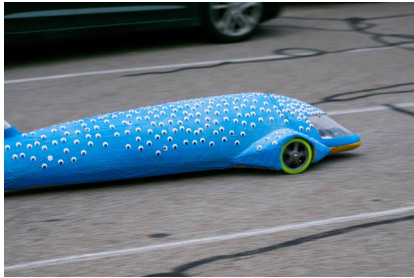
Bonnie Li* - D Team

* - Indicates new driver.

Fringe

Best result of last 5: Men 2nd (2012), Women 2nd (2016)

Org records: Men 02:05.08 (2011), Women 02 :34.70(2001)



Although Fringe started the first weekend of the year uneventfully, Bissa brushed the bales in the chute on the second weekend and stopped at the end of the chute. Unfortunately, she was out of view of the flaggers, so no stop flag was thrown to prevent Bolt, who was following her around the course, from entering the chute. Fortunately, Bolt cleared the chute, but Fringe's Hill 3 pusher had to contend with the mighty power of EMS when they tried to retrieve Bissa. Luckily, there was no damage to driver or buggy. Fringe joined CIA in fielding some suspiciously old pushers on Parents Weekend, but otherwise rolled in their typical efficient fashion. They may have been too frugal with the duct tape that weekend, and Blueshift ended up losing a front hatch after tangling with a finish line catcher. At Halloween, observers were startled by the unsettling number of googly eyes that made a creative costume for one of the buggies. On Mini-Raceday, Fringe was back on typical form, finishing second, just behind SDC. Blueshift also sported some experimental magnetic wheel covers that repeatedly did not stay on through the chute. We expect not to see those this weekend.

On the first weekend of Rolls in the spring, Fringe debuted their newest buggy NB2018, code named "Bumper". It was sticker-bombed in lieu of a final paint job, and looked fast (like all Fringe buggies). They also debuted some new faces on the back hills, adding to the excitement. During the remainder of the spring weekends, they were repeatedly rolling five buggies at a time, an impressive number when most teams were rolling three. They had one stop in the chute, but otherwise an exceptionally clean spring practice season.

2017 Best Time:

Men's: 2:13.30

Women's: 2:38.06

Blueshift - 2017



Amy Chen - A Team (Men's)
B Team (Women's)

Bumper 2018



Nina Prakash - A Team (Women's)
B Team (Men's)

Boson 2016



Helen Kim - C Team

Bissa 2012



Bolt 2014



Tishya Girdhar* - D Team (Women's)

Sarah Connor* - D Team (Men's)

* - Indicates new driver.

PhiDelt

Phi Delta Theta

Best result of last 5: Men 13th (2016), Women 11th(2016)

Org records: Men 02:26.03 (2017), Women 02:56.08(2016)



PhiDelt was rarely seen during the autumn season, showing up only during the first and last weekend of rolls. On Mini Raceday, they rolled with SigEp in order to allow both teams to increase their roll counts. PhiDelt's driver had an issue with a helmet slip during one roll, stopping at the transition flag, but otherwise they rolled uneventfully when they were in attendance.

In the spring, PhiDelt missed the first weekend of rolls, but returned for the second and third weekends. Unfortunately, the driver lost control of the steering during a roll on the second weekend, and rolled partially on to the sidewalk near the Panther Hollow Bridge. She was uninjured and both she and the buggy returned to the course later on.

2017 Best Time:

Men's: 2:26.03

Women's: 3:08.63

Argo - 2017



Adeline Shin - A Team

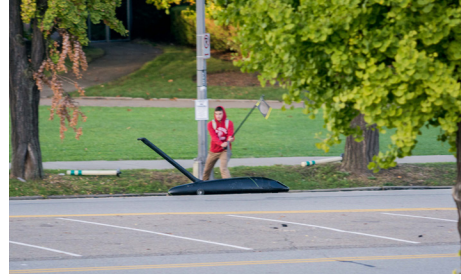
* - Indicates new driver.

PiKA

Pi Kappa Alpha

Best result of last 5: Men 2nd (2017), Women 3st (2017)

Org records: Men 02:04.35 (2008), Women 02:29.83(2004)



PiKA, like Apex, inaugurated the buggy season with a spin in the chute. On the first weekend of the fall, they had a routine spin, but otherwise they were trouble-free until the third weekend in the fall, when Cliodhna spun (again without contact). Raptor did not seem to be nearly as fast as Cliodhna, and a hapless Hill 3 pusher had to run backwards to get her once after lining up far too optimistically.

PiKA started the spring with a stop by Cliodhna above the monument, although after speaking with EMS and the Safety Chair, the driver was permitted to finish the roll. On the second weekend in the spring, PiKA provided more drama, with Banshee losing its hatch in the chute and the rest of the fleet having to navigate the debris to complete their rolls. In addition, the same weekend on a subsequent roll, Raptor lost a hatch on Hill 2 and Banshee also lost a hatch and came to a stop in the chute. PiKA might want to invest in some better quality adhesive taping technology. However, they probably shouldn't change much else, since they look like they are very quick, particularly with Cliodhna.

On Truck Weekend, PiKA attempted to qualify a new driver (first seen the weekend before) in Cliodhna. They got the required number of rolls and pass test in a very clean and efficient fashion, and so appealed to Sweepstakes for an exemption. Sweepstakes has been recently trying to strengthen the enforcement of driver qualification regulations, and therefore she will be driving, but only on unheated wheels.

2017 Best Time:

Men's: 2:08.42

Women's: 2:33.24

Banshee - 2013



Cliodhna - 2016



Victoria Van Benschoten - A Team

Taylor Davis - B Team

* - Indicates new driver.

SAE

Sigma Alpha Epsilon

Best result of last 5: Men 7th (2015), Women 7th (2015)
Org records: Men 02:14.74 (1991), Women 02:54.50(2010)



SAE was missing in action on the course until the second weekend of the spring. However, when they did appear, there was a surprise - a new buggy! Perhaps that was just the gestation period of an SAE buggy. It is a forward trike with a CIA Tempest-like profile. It cautiously moved around the course on its first weekend, but then was unseen again until Truck Weekend, requiring 11 rolls and a pass test to be race-qualified. They got these, qualifying the first male driver on the course in a few years. We'll see how he looks on the course come Raceday.

2017 Best Time:

Men's: 2:19.52

Women's: 3:43.47

Eileen - 2018



Larry Wu* - A Team

* - Indicates new driver.

SigEp

Sigma Alpha Epsilon

Best result of last 5: Men 2nd (2015), Women 3rd (2012)
 Org records: Men 02:08.55 (2009), Women 02:33.95(2009)



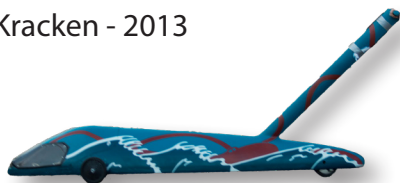
SigEp, like CIA, got off to a loud start, beginning fall rolls with a rattling stop of Kracken in the chute. The third weekend in fall saw the return of Beyonce from her maternity leave, and the beginning of a fall pattern of lightly-manned hills. Some of SigEp's pushers got some significant cardio in the fall. On Mini Raceday, they rolled with PhiDelt, most likely due to manpower shortages all around.

SigEp's spring was also relatively uneventful, although they did impress us by sending out Hydra right before Truck Weekend, for a fleet of four buggies going around the course. We'll be seeing all four of them on Race-day.

2017 Best Time:

Men's: 2:09.24
 Women's: 2:43.47

Kracken - 2013



Nazli Uzgur - A Team

Barracuda - 2009



Sophie Halpern -B Team

Hydra - 2016



Beccy Zhang* - C Team

Beyonce - 2017



Haiwen Liu* - D Team (Men's)

* - Indicates new driver.



SDC started off the fall in an exciting fashion, with Vice taking a left turn at Panther Hollow, Avarice narrowly missing the chute barricade, and then in a subsequent roll, Vice losing an axle. To cap it off, later on in the day Avarice lost control in the chute and headed into the outer bales, “crunching” the hatch after it popped loose (but not crunching the driver, which is the important part). After that disastrous start, they quickly returned to form and speed. They were sabotaged by the course potholes, however, and Vice broke another axle later in the fall. Like Fringe, SDC was also feeling the Halloween spirit, and so Inferno wore a devil costume, while Avarice was a very festive pumpkin. While they “won” Mini Raceday, SDC also had an incident on the final day of fall rolls when Avarice attempted to send a wheel into Westinghouse Pond. The driver was fine, and Avarice returned to the course in the spring.

SDC was the first team to complete a pass test in the spring, and also the first team to lose a wheel fairing. Otherwise, their spring showed the excellence we’ve come to expect from the many-year champions, with only one chute miscalculation from Vice, resulting in a direct hit on the grate.

2017 Best Time:

Men’s: 2:02.16 (New Course Record!)

Women’s: 2:23.27 (New Course Record!)

Inferno - 2017



Anna Black - A Team

Malice - 2009



Kyoko Inagawa - B Team

Avarice - 2010



Amanda Ventura-Molina* - C Team

Vice - 2013



Jinxia (Elaine) Ouyang* - D Team

* - Indicates new driver.



SigNu got a late start in the fall, only appearing on the third weekend of Rolls. After some mishaps involving lifting, braking, and their follow car, they were unseen again until November, when Krait decided to make like a dead fish and roll over. It seemed to be a bit of an anomaly, since the buggy had three bags and was moving slowly, but accidentally headed towards the curb. The driver was a bit shaken but seemed physically ok. Unfortunately, this was the last we heard of them until Truck Weekend, when they tried to qualify a new driver in Krait, but with too much ground to make up, opted to not even show up Sunday. They will be racing as an exhibition, as they did not complete enough rolls to qualify their driver.

2017 Best Time:

Men's: 2:09.05 (1985)

Women's: 2:40.55 (2009)

Bungarus Krait - 2009



Alana - Exhibition Heat

Spirit

Best result of last 5: Men 4th (2017), Women 3rd (2016)

Org records: Men 02:06.20 (1988), Women 02:33.03(1995)



Spirit got off to an astonishingly quick start, with full Hill 1s on the first day of rolls in the fall. They also provided a bit of excitement that same day, when a driver's scarf shifted into her eyes. She made a beautifully controlled stop, as did the buggy behind her. In the second weekend of rolls, they had worse luck, when Zuke hit a bump entering the chute and then skidded to a stop, sparks flying. It appeared that there was perhaps a structural strut failure, but the driver was fine and the other buggies stopped safely. They had a few more chute shenanigans throughout the fall, but nothing major. However, outside the chute, another mechanical problem (intermittent scraping while rolling on flat ground, as per an observer) scratched Inviscid for one day of rolls. Thankfully, Inviscid was back for Mini Raceday and rolling fast. On Mini Raceday, Spirit provided another surprise by rolling Menes, a buggy unseen on the course for 20 years. Although it was a surprise to see it on the course, it won't be returning on Raceday.

In the spring, Spirit had minimal excitement (the best kind of spring!) There was some initial issues with hatch attachment, but they were fixed by the second weekend. We are looking forward to seeing some speed from them come Raceday.

2017 Best Time:

Men's: 2:09.33

Women's: DNF - Spin

Kingpin II - 2002



Rebecca Kang - A Team (Men's)

Inviscid - 2015



Beichen Liu - A Team (Women's)
B Team (Men's)

Seraph - 2004



Sarah Shy* - B Team (Women's)

Zuke - 2011



Diamond Moody - C Team (Men's)

* - Indicates new driver.

Robobuggy

Org records: 3:18.90 (2017),



Robobuggy is our first fully-fledged autonomous team, and this year was part of the roll order during the fall. There were some initial problems with making the transition successfully, but it began to reliably make it through the freeroll and about halfway through the chute. We welcome our new robotic overlords. The downside is, some of the colder weekends in the spring seemed to cause sensor problems, and we do not expect them to be fully self-driving this year. They mostly worked with Transistor, but debuted a new frame and shell buggy NAND in the spring, realizing that they could actually use the more structural (and weighty) design compared to their human counterparts. They will not be fully autonomous during Raceday this year, but the immense progress we've seen leads us to believe that they will be hands-off on the steering very soon.

2017 Best Time:

Autonomous: 3:18.90

NAND - 2018

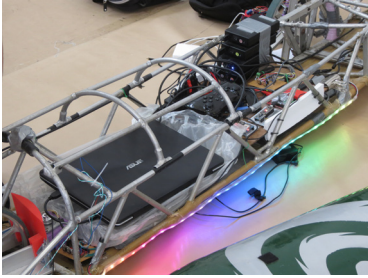


Transistor - 2015



* - Indicates new driver.

Atlas



Atlas joined the fray in the robotic division over the last few years and this year earned full organization status alongside Robobuggy. While originally starting with Quasar (an old CIA buggy), this year Atlas has taken a different direction than their closest competition by employing the use of a child stroller that they have fully outfitted with sensors and controllable steering. During the races last year, we saw them all over the course and unfortunately during Prelims they took a hard turn into the curb just by Westinghouse Pond. During Finals last year, the exhibition races got rained out, so they were unable to make up for their previous blunder. They're a bit further behind on the autonomous side, so they will also be running via teleop on raceday this year.

2017 Best Time:

N/A

Roboquasar - 2002/2016



* - Indicates new driver.

2018 Raceday Predictions

It looks like we'll have another exciting Raceday! While most teams' freerolls on Truck Weekend were not quite as impressive as last year's blisteringly fast times, probably due to the "weathered" Pittsburgh roads, there is still remarkably consistent speed across the board. In optimal conditions, we could be looking at another six to seven teams putting up sub-2:10 times in the Men's races. And while the chilly weather and rough roads might add a second or two to those times, I anticipate a very, very tight race for 2nd or 3rd through 6th place. Expect small mistakes to make a big difference, and expect at least one finals heat to be a photo finish. As always, the volatile nature of Women's times makes predicting results difficult. Expect SDC to run away with the trophy, but their B team should taper off and make room for other orgs. Keep an eye on wildcard Spirit, who have a history of Women's DNFs, and look out for Fringe to enter the top-3 mix.

	Women		Men
1	SDC A	1	SDC A
2	CIA A	2	PiKA A
3	Fringe A	3	Fringe A
4	PiKA A	4	Spirit A
5	Spirit A	5	CIA A
6	SDC B	6	SDC B
7	Fringe B	7	Fringe B
8	SigEp A	8	CIA B
9	CIA B	9	Fringe B
10	Apex A	10	SDC C

Apex – Their veteran driver is only qualified in their new buggy "Hot Potato" (properly named Azula), whose pushbar was a floppy hot mess on their last roll of Truck Weekend. They're boldly using Azula for their A-team, and we applaud their bravery.

CIA – They're still showing up, and still executing well, but they look exactly the same as they have for the last 3 years. Maybe this year they'll have the roster to push them to the next level.

Fringe – Sleeper alert! Last year, they missed a Men's or Women's top-4 for the first time since 1998. This year, they've figured out what used to make them great, and are executing it with traditional Fringe reliability. Look out, CIA!

PhiDelt – They picked up their driver late in the fall, after what must have been a mad scramble to find one. As a result, they haven't made any notable strides this year, and are the slowest-rolling team.

PiKA – They're not showing their hand. On Truck Weekend, their freerolls were unimpressive and their Hill 5 looked like he was jogging. They lost their big Hill 1, but I have a strong suspicion that they're hiding something. Expect them to be a contender for the trophy.

SAE – They built a new buggy. Hooray! They only showed up to 4 days of rolls. Boo! Maybe next year?

SigNu – Speaking of poor attendance, SigNu got 5 rolls total, all year. What happened to "turning over a new leaf"?

SDC – It's all systems normal, if anything that SDC does can be remotely considered "normal."

SigEp – They seem to be rolling a bit faster, and always have the pushers to back it up. Expect them to be in the mix, with the potential to set some team records.

Spirit – With a clean, quick spring, and their history of spins hopefully behind them, they should be trophy-worthy.

A Summary of Buggy Crash Testing

Rachael Schmitt

In 2015, we received a Student Undergraduate Research Grant to crash test buggies. Prior to that, the only information of how drivers and buggies react in crashes had been from real buggy crashes, and there were several bad crashes in my time at CMU that prompted lots of discussion among students and alumni. All the data people were using to draw conclusions came from real crashes, and those are rare and largely unrecorded with conflicting accounts. I had questions that I couldn't find conclusive answers to, so I applied for a SURG to see if I could do my own experiments. The goal was to create additional data points to inform our knowledge on how a buggy driver's body is impacted in a buggy crash, and how a monocoque carbon fiber shell and harnessing system will respond to high impact crashes.



The first step in this project was to track all available buggy crash records. We reviewed Carnegie Mellon Emergency Medical Service Buggy incident records for six semesters, beginning with March 2012 and ending with September 2014. There were 32 'crash incidents' during this time period. The incident number ranged from 3 to 11 per semester, while the total roll count ranged from 381 to 699. Of the 32 crashes, two were severe enough to warrant hospital transportation, and both of those resulted in lasting injury to the driver.

For proof of concept, I built a 'death sled' on wheels. It was a piece of plywood with two crappy axles, and milk crates screwed into it. We put a bunch of scrap metal in the crates to add weight. The question I forgot to ask is "Where is all the metal going to end up?" and the answer was "Everywhere".

In order to gain more information about crashes (and less flying scrap metal), we tested two actual buggies. One was an old 2006 buggy named Bethany (formerly of Pioneers and Apex). She was in poor shape and we patched her up by filling holes with Nomex and carbon fiber, and reinforcing her nose with additional carbon fiber. The other was a new buggy named Bacon who hadn't seen a single roll due to being too small to adequately fit a driver.

We devised and tested a car-powered pulley system to control the speed and direction of the buggies' headfirst crash into the curb. Bethany had a crash test dummy from the Transportation Research Center in her, while Bacon was too small to accommodate a dummy and instead had sandbags to simulate the weight of a driver.

We sought to test the worst case scenario of a potential crash, as ascertained by the analysis of EMS records and discussion with medical professionals. Therefore, both buggies were crashed headfirst into the curb at approximately 30 mph, with an additional crash of Bacon into haybales.

The dummy in Bethany, despite being harnessed according to the safety standards of the rules, instantly

ejected from the buggy as it impacted the curb. The crash test dummy and accelerometer didn't survive the crash (RIP Kirby the dummy, you died in irony). The attachments of the harness to the buggy ripped out on impact, rendering the harness system useless. This was also the failure point in a real crash in 2014. The attachment method for this experiment and the one used in the real crash were entirely different. However, both attachment methods were approved by multiple safety chairs. We strongly advise adding a rule restricting the methods of attaching the harness system to the buggy.

After we augmented Bethany's nose with additional carbon fiber, she suffered an equal amount of crumple zone damage as the new buggy Bacon. This indicates that older buggies can be properly upgraded to proper safety standards.

Furthermore, almost every driver is going to slide forward, to a degree, in a headfirst crash. The purpose of the harnessing system is to prevent ejection from the buggy, but we have seen that fail in multiple real crashes as well as this experiment. So far, all of these failures have occurred in reverse trike buggies, where the driver's momentum forward was not impeded by anything. If instead the driver were to accelerate into the front wheel/steering of a forward trike buggy, the results could be catastrophic. With this in mind, we believe that Sweepstakes should consider phasing out forward trike buggies with sizeable front wheel apparatuses.

Finally, additional research needs to occur to continue to improve safety standards in Buggy. We encourage more individuals and teams to conduct testing to contribute to the knowledge base of the community.

The full report and associated video can be found on the Buggy Alumni Association forums. Contact schmitt.rachael@gmail.com for any questions or comments. Thanks to everyone who helped make this crash testing a reality - we hope future students may be able to build on this to improve buggy even more!



Meet an Alum - Jordan Kunz

Every year, we feature an Alumnus or Alumna who has made an interesting contribution to buggy. This year, we interviewed Jordan Kunz. Jordan raced with SDC between 2012-2016, including a legendary blisteringly fast Hill 5 and dive for the pushbar in 2015.

1. How did you get started with buggy in the first place? What was your first role on a team?

I had a friend on my freshman floor who asked me to join her team as a pusher. I said I'd only join if I could bring my friend Eddy along too and so I forced him to come out with me that weekend. We both really hated our first day, but four years later I was racing on my fifth Raceday and Eddy was Sweepstakes Chair so I think it worked out pretty well for us.

My first role on the team was as Push Captain starting my sophomore year. I really loved being Push Captain. You get to know everyone on the team, be the first person to greet new members, and lead the way in supporting your teammates. I was really lucky to have been in that role.



2. What's your favorite buggy memory?

I didn't do it very often, but one of my favorite things to do was pace the Hill 5 pusher during rolls. I loved being right there next to them, cheering them on, and forcing them to dig deep. It's a really amazing feeling to be running in sync with your teammate, helping them power through a long hill, and seeing them give it their all. To this day my favorite races to re-watch are those where we're close on the backhills because you can see people really pushing themselves and hear the crowd going crazy.

3. What's the craziest thing you did for buggy?

I'm not sure I did anything particularly crazy beyond the normal sacrifice of sleep, but in retrospect I did spend an unbelievable amount of time on pusher preparation. I remember spending hours re-watching old races and preparing notes on technique. I'd write instructional emails with notes on races I wanted pushers to watch, and during practices I'd keep notes on coaching points for individual pushers.

I'd even spend hours just making sure I was prepared for logistics. The night before my first Raceday as Push Captain I spent the whole evening preparing notes on all the logistics of which pushers needed to be where and at what time, what everyone's contact information was, which reminders to give pushers depending on their heat and what we'd been working on in practice, and anything else I could think of that I might need. It actually paid off because that year they swapped the order of the Men's and Women's races and we had a mad scramble to get everyone out to their hill on time.

4. What's the best thing you learned from buggy?

I learned that attitude really defines your experience. Meetings and practices are often in freezing temperatures and at odd hours which makes it easy to get frustrated or phone it in. All those feelings go away though when a couple members of your team are enthusiastic and engaged. The energy becomes infectious and soon everyone is having a good time. I loved hearing from new members how they never expected to have as much fun as they did. They'd come to just try pushing once and then stay for years.

5. Did buggy influence or help your career?

I don't think buggy influenced my career direction, but it sure gave me a lot of good leadership and teamwork experience. It's not easy being a part of a 75-person team, and learning how to keep people engaged and motivated was a constant learning experience.

6. What was the stupidest moment you had in Buggy?

I tended to do somewhat embarrassing things when I actually raced on Raceday as evidenced below:

Freshman year - I almost got run over by the follow truck. I didn't realize I had to get out of the way once I shoved off to Hill 2.

Junior year - I forgot to bring shorts and so I raced in pants in 70 degree weather. I remember the commentators found this amusing. (In my defense it was really cold when I got to the hills that morning.)

Senior year - I somehow forgot four years of "Don't let the buggy get away from you on Hill 5" and almost got my team DQ'd at the finish line. I also had to go to the hospital to check for a concussion after diving to cover my mistake. My dad was proud. My mom less so. (This mythic moment can be seen here: <https://youtu.be/z3G5B4yXX-A?t=7155>)

Grad student - I kept the buggy too long on Hill 2 and so I fell when I shoved into the freeroll. The commentators also found this amusing.

I didn't do anything particularly stupid my sophomore year, but my team got DQ'd so I feel stupid in a different way about that.



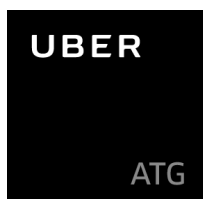
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And finally, many thanks to our Raceday Preview contributors (Aileen Dinin, Ethan Gladding, Jeremy Tuttle, Rachael Schmitt, and Jordan Kunz) as well as the BAA committee:

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