



# Cornell Racing

## 2013 NEWSLETTER

JUNE 2013

## 6TH OVERALL AT FSAE MICHIGAN!

As the Formula SAE competition season comes to an end, Cornell Racing is extremely excited to report that our 2013 racecar, ARG13, placed 1st in the Acceleration Event and 6th overall at FSAE Michigan in May! This is our team's best competition placement since winning its ninth title at FSAE Michigan in 2005.

Starting as early as summer 2012, the Cornell Racing FSAE team began the difficult task of planning and designing ARG13 from the ground up. Review of final design reports in December was then followed by the January manufacturing period ("JanMan"), in which team members gave up their winter vacation plans and returned to Cornell University's campus to build and assemble this year's competition car.

Rolling out of our lab facilities on March 9th, ARG13 next underwent a rigorous testing period and was developed using a variety of test tracks and simulations leading up to competition. The team's data

acquisition and analysis capabilities have improved tremendously using our MoTeC M400 ECU and Advanced Dash Logger (ADL3), and Cornell Racing's driver training program has benefitted greatly from the addition of a stock-engined car repurposed from our 2012 competition vehicle.

Most spring weekends were spent setting out cones in empty parking lots, prepping the car for the day's driving, grilling team lunches, and waiting for inevitable problem solving sessions to arise. In under two months, our drivers were able to put 250 miles on ARG13!

The morning of May 7th, thirty members of Cornell Racing's sixty person team departed Ithaca, New York on a 10-hour drive to Brooklyn, Michigan. Five days later, our team leaders stood on stage at the Michigan International Speedway to receive our 6th place trophy!

A full competition summary is included on the next page...







## FSAE MICHIGAN COMPETITION SUMMARY



### 2013 CORNELL RACING RESULTS

Acceleration	1st place (75 pts)
Endurance	6th place (270 pts)
Design	10th place (100 pts)
Presentation	12th place (61.8 pts)
Fuel Efficiency	12th place (56.8 pts)
Skidpad	22nd place (27.9 pts)
Autocross	23rd place (102.7 pts)
Cost Analysis	76th place (62.2 pts)
<b>OVERALL</b>	<b>6th place (756.5 pts)</b>

### DYNAMIC EVENTS:

Dominating the Acceleration Event track, ARG13 and driver Aleksí Lee easily claimed 1st place with a time of 3.83 seconds - more than 0.2 seconds faster than the second place finisher. ARG13 did not perform as well as practiced during both the Autocross and Skidpad Events. However, drivers Ryan Kennett and Chris McPherson stepped up and raced ARG13 to a 6th place finish in the infamous Endurance Event, which only 40 of the 126 registered teams were able to complete.

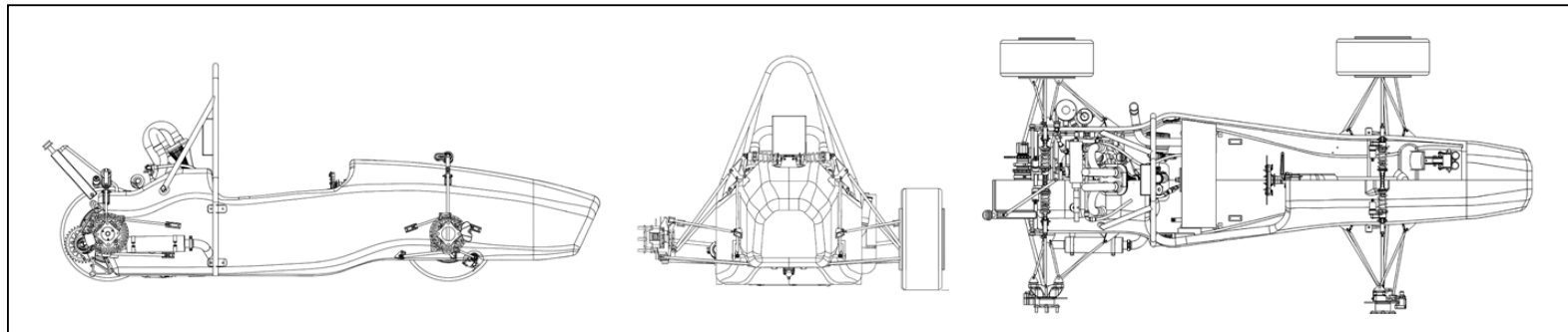
### STATIC EVENTS:

Receiving much positive feedback from the judges, Cornell Racing tied for 10th place in the Design Event and narrowly missed an invitation to present in the Final Design round. Our business strategy and marketing team was commended for its advanced concept development and professionalism, placing 12th in the Presentation Event. Our placement in the Cost Analysis Event was low relative to all teams. However, our 611 page submission scored 19.2 out of 20 points for accuracy, and 18 out of 20 points for the Real Case Scenario component prepared by junior Brendan Higgins and presented by M.Eng. Matt Byrne and senior Jesse Greene.

**Cornell Racing placed 6th overall with a final score of 756.5 points!**







## ARG13 DETAILS AND SPECS



### GENERAL SPECS:

- 411 lb, without driver
- 65" wheelbase, 47.5" front track, 47" rear track
- 40/60 front-to-rear weight distribution

### PERFORMANCE:

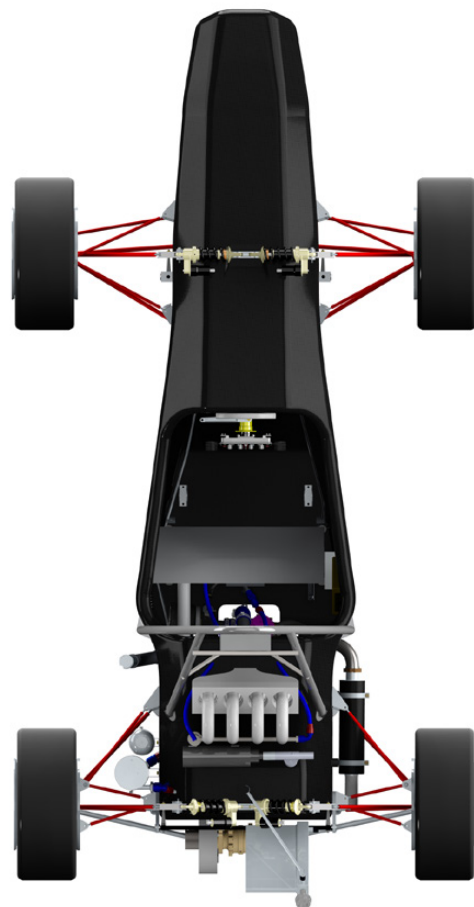
- Peak power: 100 hp at 7500 RPM
- Peak torque: 60 ft-lbs at 5000 RPM
- Acceleration 0-60 mph: 2.7 s
- Maximum lateral acceleration: 1.8 g
- Braking acceleration: -1.2 g
- 60-0 mph braking distance: 98 ft

### CHASSIS:

- Student-designed and fabricated single-piece carbon fiber monocoque
- 4-wheel independent double A-arm suspension
- Pushrod-actuated Penske 7800 2-way adjustable dampers
- 6.0x10" Hoosier racing slick tires

### POWERTRAIN:

- Turbocharged Honda CBR600RR engine
- BorgWarner KP-35 Turbocharger with custom, laser-sintered turbine housing
- 6-gear sequential pneumatic transmission
- MoTeC M400 ECU
- MoTeC ADL3 data collection and logging



**THANK YOU TO ALL OUR SPONSORS!**



...and more!

### 2012-2013 TEAM LEADERS

Ryan Kennett, Team Leader  
 Jesse Greene, Engine Team  
 Masaki Endo, Chassis Team  
 Anthony Boiano, Electrical Team  
 Audrey Speer, Business Team  
 Matt Byrne, Teaching Assistant  
 Prof. Albert R. George, Faculty Advisor  
 Prof. John Callister, Faculty Advisor





## 20TH ANNIVERSARY OF ARG93

### CORNELL RACING'S THIRD CHAMPIONSHIP TEAM!

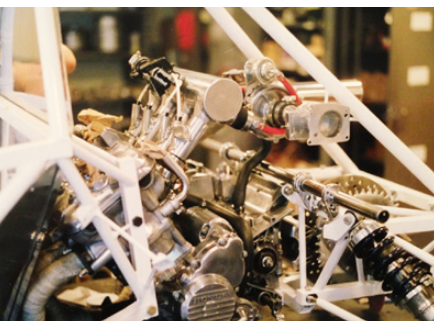
Twenty years ago, the 1992-1993 Cornell Racing team and their competition racecar, ARG93, brought home the championship title at FSAE Michigan.

Looking back, the Cornell Racing program has come a long way. In 1993, fuel injection was added to the car. This system consisted of electronic spark control and central port injection designed and built by the team. The power output of the car increased by roughly 20%. Other

changes included an original mono-shock design, a larger turbocharger, and a composite front crushable zone.

ARG93 fully dominated the competition taking 1st place overall. The team was awarded top honors in categories like Spirit of Excellence, Best Engineering Design, Best Performance Award, and Best Prototype Fabrication.

Several members of our current team had not even been born yet when ARG93 hit the track. This year, we raced to make our 1993 alumni proud. Congratulations to all!



### LOOKING FORWARD... **ARG14**

Already in the planning and design stages, next year's competition car, ARG14, will build off recent successes with further weight savings and improved drivability. Instead of major design changes, the 2013-2014 Cornell Racing team will focus on overall packaging and new driver training programs.

The team is motivated and will benefit from a returning class of M.Eng.'s. ARG13's trophies prove that the Cornell Racing program is capable and ready to claim its tenth Michigan title in 2014.

## DONATING TO Cornell *Racing*

Without generous contributions from our sponsors and donors, the Cornell Racing team would not be able to make design advancements, or even produce a car. If you are interested in making a donation to Cornell Racing, checks can be made payable to "Cornell Formula SAE" and mailed to the address below. We need your support!

**Albert R. George**  
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