About

- Design, build, and race a scale formula-style car
- Electric-class of the Formula SAE series

**Lead Advisor:** Dr. Ryan Hutcheson - Mechanical and Aerospace Engineering

**Technical Advisor:** Dr. Mehdi Ferdowsi - Electrical and Computer Engineering

**Business Advisor:** Mr. Tony Arnold - Office of Sustainable Energy and Environmental Engagement
History

• Founded in 2012
• Serious design started mid 2013
• Car mechanically complete by June 2014, not electrically
• Electrical systems implemented over fall 2015 and spring 2015
What’s Been Done?

- Mechanically complete vehicle
  - Student fabricated frame
  - Student machined centers, uprights, and much more
- Custom hard logic for the safety mechanisms of the car
  - Student designed PCBs for the main logic board, dash, voltage regulator
  - Everything justified and accepted in competition documents
A Bit About the Car

- Wet weight currently 400lb, estimated to stay under 430lb all said and done
- 72 LiPo cells from EIG (specifically lithium nickel manganese cobalt) in series
- Just under 300V up to 200A
- A single 3 phase AC motor capable of up to 100kW
- Competition limited to 80kW, design limited to 60kW
On the Horizon

• More power, smarter cars
• Custom in-hub motors
  • Designed, prototype completed and awaiting testing
  • For planned use on third car (2017 competition)
• In-house motor controller
  • To be started this fall
  • Fulfills power, packaging, and control requirements not available on the market for a reasonable price
The Next Step

• 2\textsuperscript{nd} Car
  • Dual accumulators – one on either side of the driver
  • Dual motors – one for each rear wheel
  • Custom traction control and increased driver assistance
  • More elegant on board communication implementation
  • Sleeker, smaller frame and packaging
  • Switch to 31 Ah Kokam cells (60 in series)
The Next Next Step

- 3rd Car
  - Four motors – one of our in-house hub motors in each wheel (20kW each)
  - Foray into the world of four-wheel torque vectoring
Questions and Comments are Welcome

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