



ARLISS

Mini-Project 2

MCHE 201 – Spring 2019

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CanSat/ARLISS



- **A Rocket Launch for International Student Satellites**
- Held in fall in Black Rock, NV
- Two classes of competition
- Many more Japanese than American teams



The Black Rock Desert



Image from: <http://www.theatlantic.com/photo/2013/09/photos-of-burning-man-2013/100584/>

The Black Rock Desert



The Launch



To Win...

- Survive launch and landing
- Autonomously move toward target
- Stop within 100m of target
- Prove the device utilized some control algorithm



CanSat Comeback Class



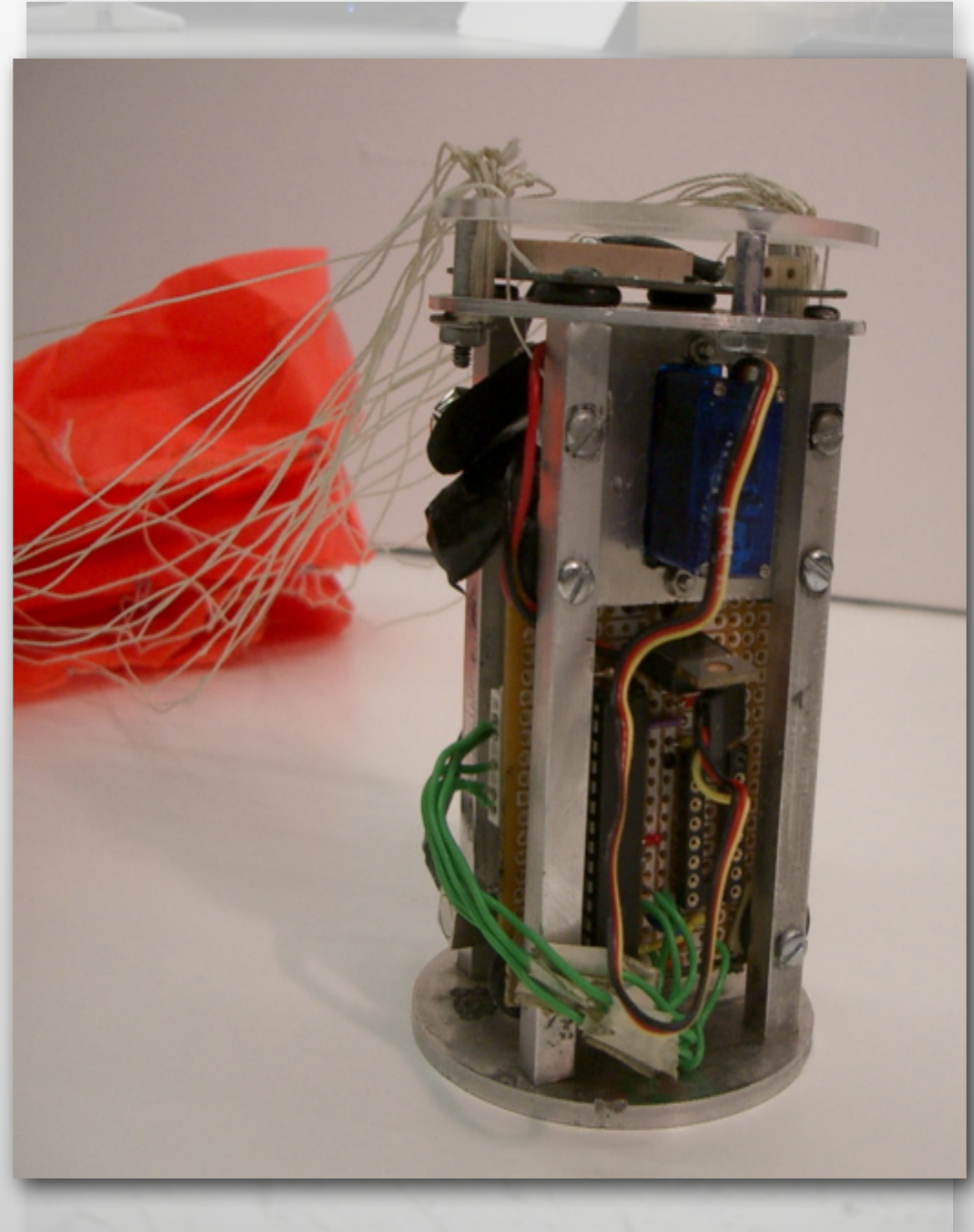
- Size and weight of Coke can
- Launched to $\approx 12,000$ ft.
- Autonomously navigate to target location



CanSat Comeback Class



- Size and weight of Coke can
- Launched to $\approx 12,000$ ft.
- Autonomously navigate to target location



Open Class



- Must fit in 146mm diameter, 240mm deep cylinder and be less than 1050g
- Autonomously navigate to target
- Launched to $\approx 12,000$ ft.



Open Class Examples



Open Class Examples



Open Class Examples



UL Lafayette's *First-Ever* Team



UL Lafayette's 2015 Team



UL Lafayette's 2015 Team



UL Lafayette's 2015 Team



UL Lafayette's 2016 Team



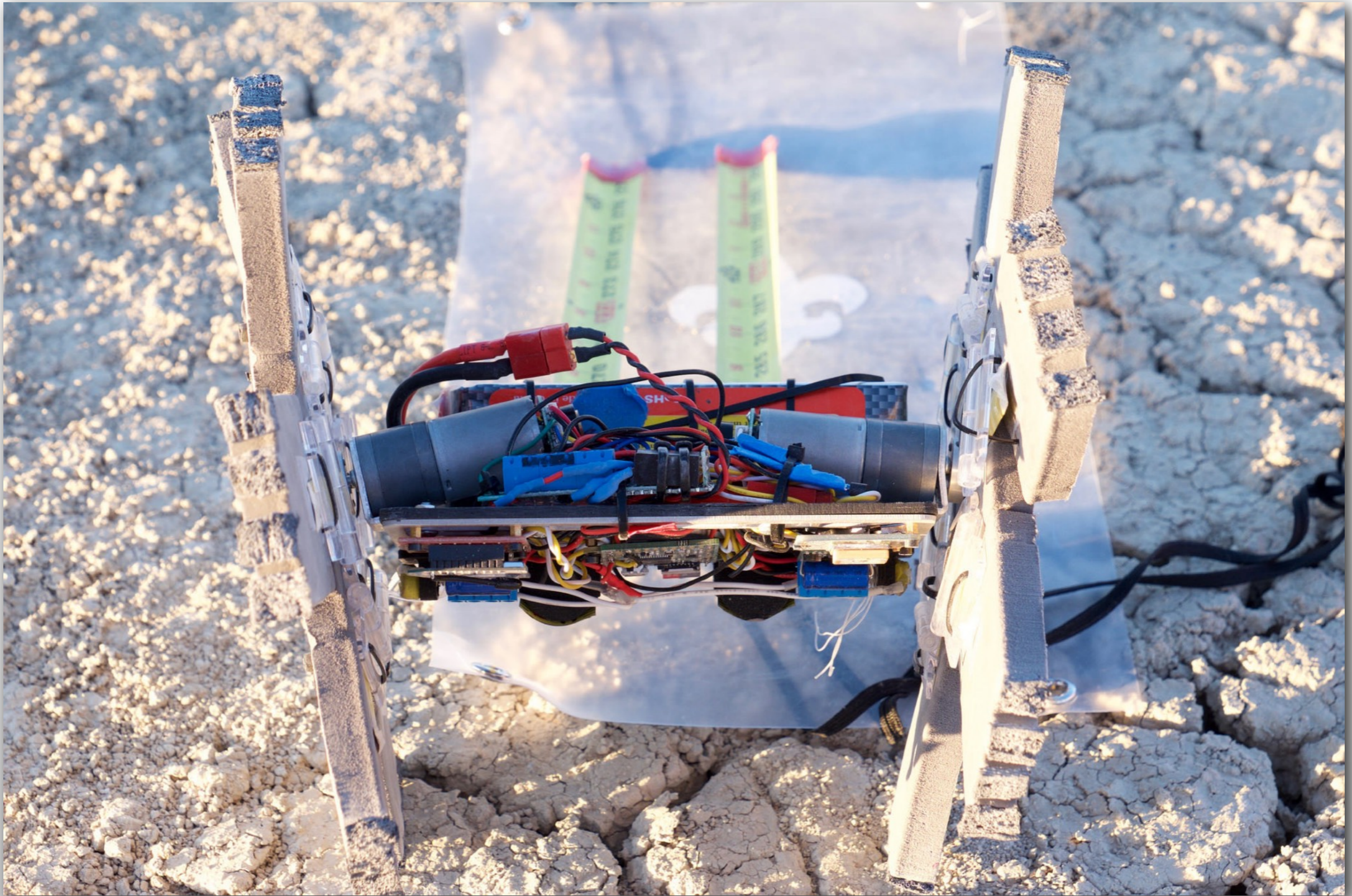
UL Lafayette's 2016 Team



UL Lafayette's 2016 Team



UL Lafayette's 2016 Team



2015 Launches



- Launch 1 – <https://vimeo.com/docvaughan/arliss2015launch1>
- Launch 2 – <https://vimeo.com/docvaughan/arliss2015launch2>

Testing on the desert



- Pre-launch – <https://vimeo.com/docvaughan/2015prelaunchtesting>
- Post-launch – <https://vimeo.com/docvaughan/postlaunchtest2015>

flickr Albums from Past Teams



- 2014 – <https://flic.kr/s/aHsk2LRZYC>
- 2015 – <https://flic.kr/s/aHsk6Xt1hc>
- 2016 – <https://flic.kr/s/aHskC3FrAj>
- 2017 – <https://flic.kr/s/aHskQREGFS>
- 2018 – <https://flic.kr/s/aHsmorEUtX>

Your Mission – Design an Open-Class Entry



- By 5pm, 2/8 – Initial Report Submission
- Week of 2/11 – Meet with one of us to review
- By 5pm, 2/22
 - Final Report
 - Final Presentation
- By 5pm, 3/1 – As an (individual) HW assignment
 - Comment on 2 other teams' presentations

Final Report and Presentation



- Report – ≤ 4 pages of text
- Video – ≤ 5 -minute presentation video to vimeo.com
- For both, you'll need to explain:
 - Problem Understanding
 - Specifications
 - Necessary Functionality
 - Develop and evaluate 3 alternative concepts
 - Objectively select a concept (3rd level Eval. Matrix)

Mini-Project 2 Timeline



February	8	Initial Report due, 5pm
	11	Review Report during this week
	22	Final Report and Presentation due, 5pm
March	1	Presentation Comment HW due, 5pm

Handouts for all plus team assignments are available at the class site

Take a deep breath... Relax...



- Propose a design *concept*
- Fully-detailed design *not* needed
 - You don't need to specify bolt-sizes, etc.
 - CAD drawings are *not* required, but figures should:
 - ◆ Be computer-generated
 - ◆ Not be *just* photos (photos must only supplement drawings)
 - ◆ Have enough detail to understand the functionality
- Report is *maximum* of 4 pages of text
(figures, tables, etc. excluded)
- Have fun

To think about...



- I will likely have funding for a 2019 entry
- Ideally a multi-semester project
 - Design and prototyping, and building spring and summer
 - Attend contest mid-Sept 2019
 - Revise design after contest
- Goal is to continue to compete annually
- Also a great Senior Design project