ARLISS
Mini-Project 2
MCHE 201 – Spring 2018

Dr. Joshua Vaughan

Rougeou 225

joshua.vaughan@louisiana.edu

@Doc_Vaughan

CanSat/ARLISS

- **A R**ocket **L**aunch for **I**nternational **S**tudent **S**atellites

- 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 ≈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 ≈12,000 ft.

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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

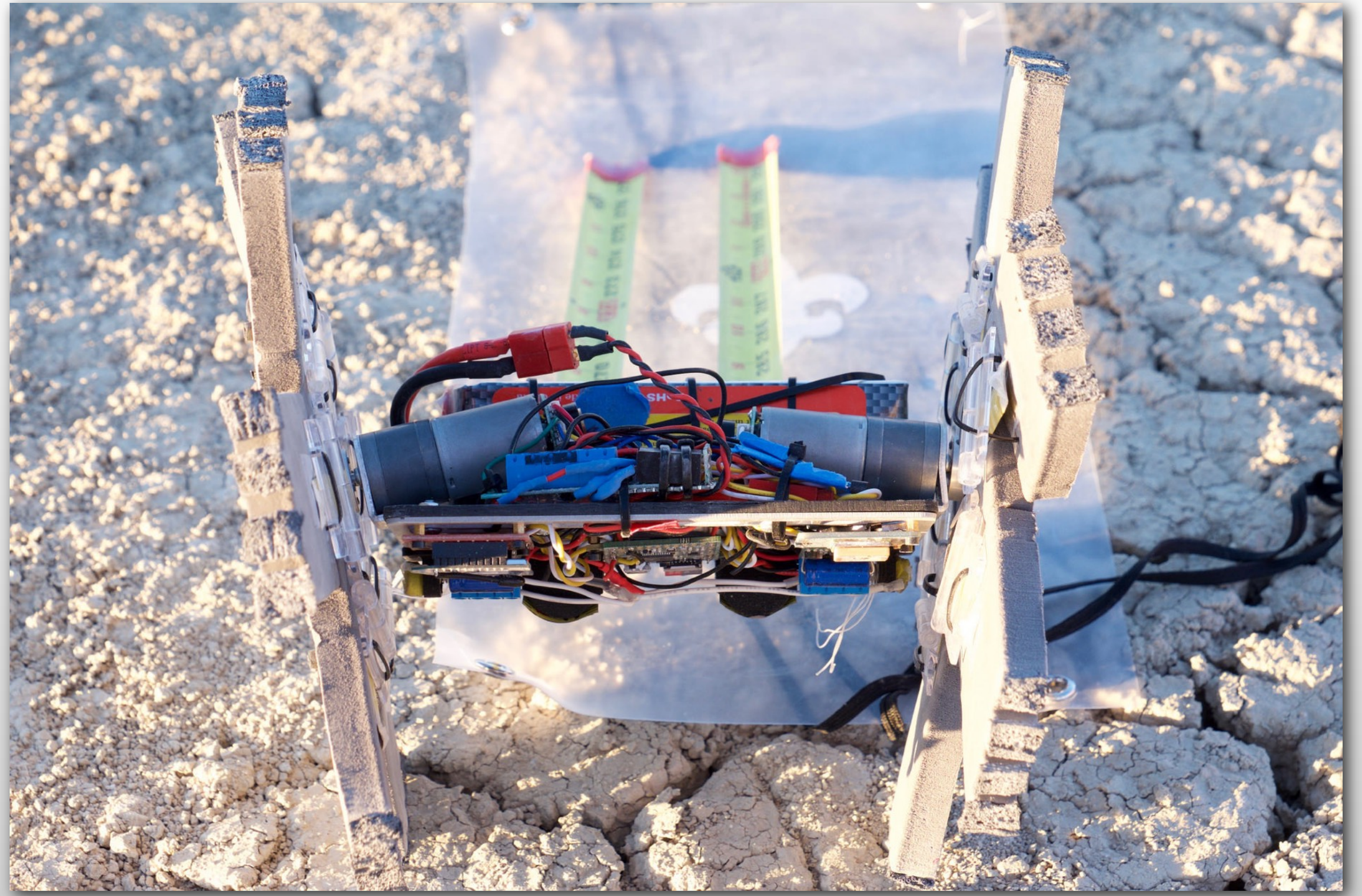
UL Lafayette's 2015 Team

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

Your Mission – Design an Open-Class Entry

- By 5pm, 2/2 – Initial Report Submission
- Week of 2/6 – Meet with one of us to review
- By 5pm, 2/16
  - Final Report
  - Final Presentation
- By 5pm, 2/23 – 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	2	Initial Report due, 5pm
	6	Review Report during this Week
	16	Final Report and Presentation due, 5pm
	23	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 2018 entry
  - Ideally a multi-semester project
    - ✦Design and prototyping, and building spring and summer
    - ✦Attend contest mid-Sept 2018
    - ✦Revise design after contest
  - Goal is to continue to compete annually
  - Also a great Senior Design project