Evan Wong

Mechanical Engineer working at Lockheed Martin

Engineering Leadership Development Program

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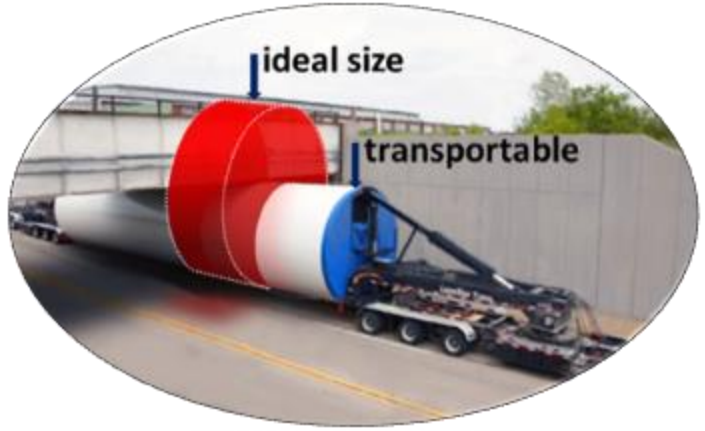

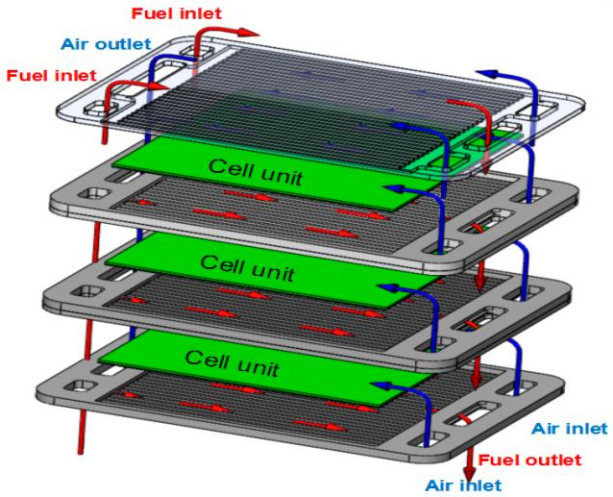

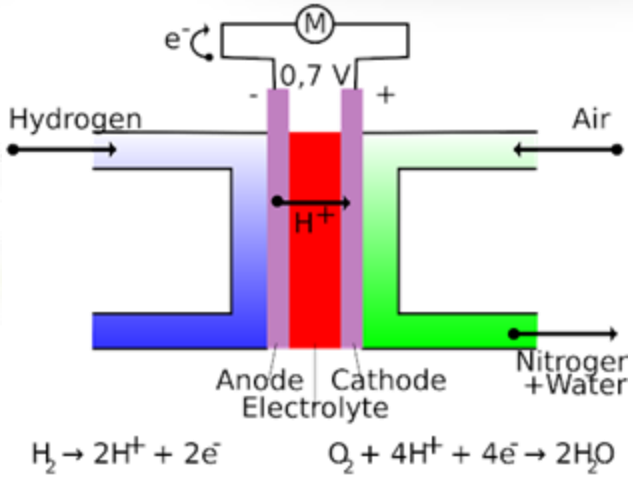

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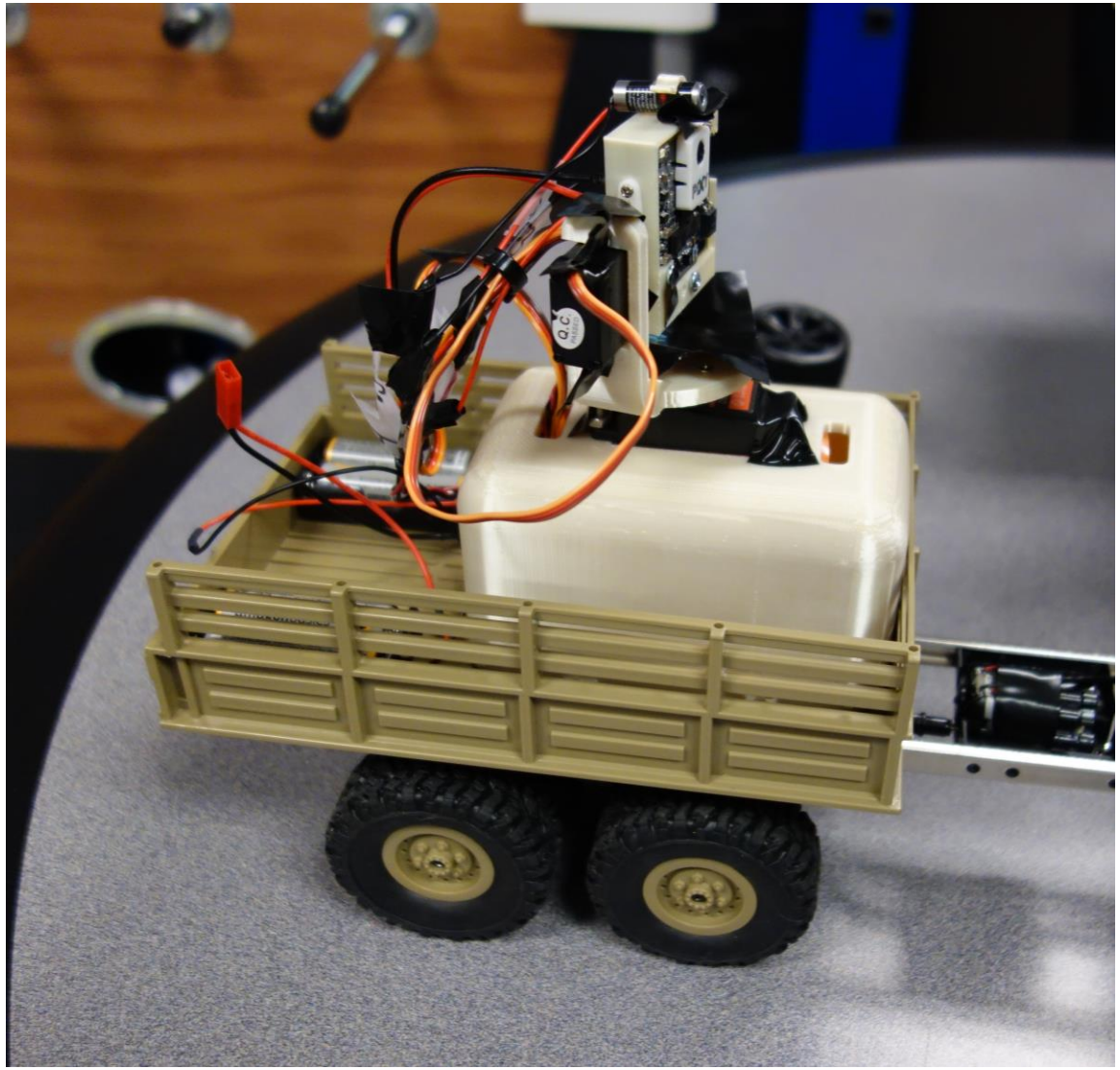
Engineering Leadership Development Program

Pursuing Masters in Systems Engineering….

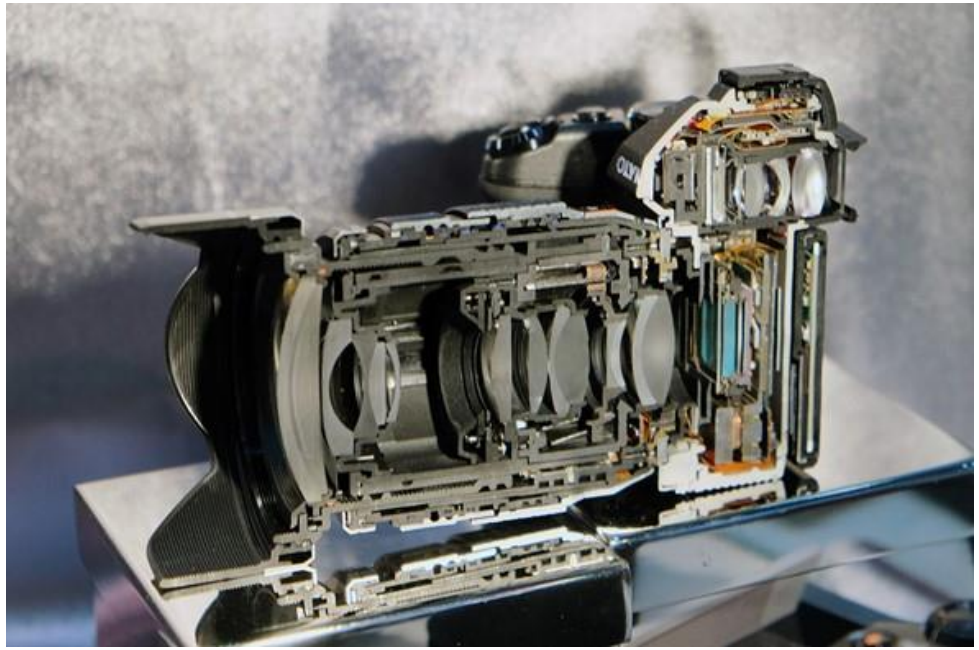
Current Work

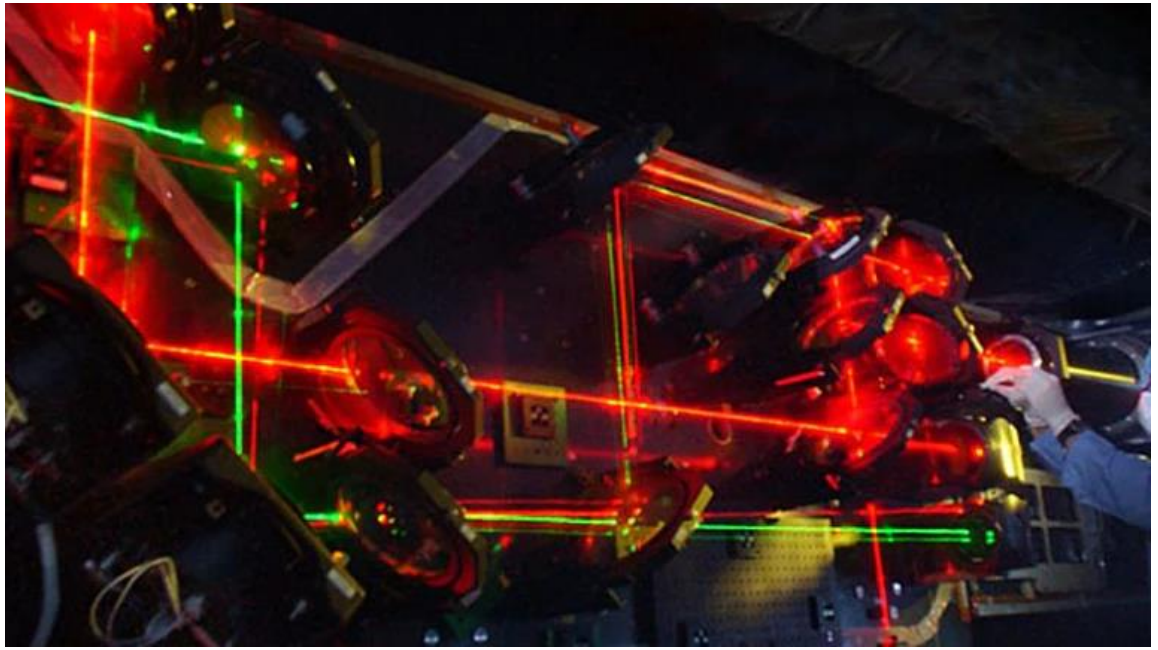
Directed Energy Group building High Energy Lasers

Demo Video



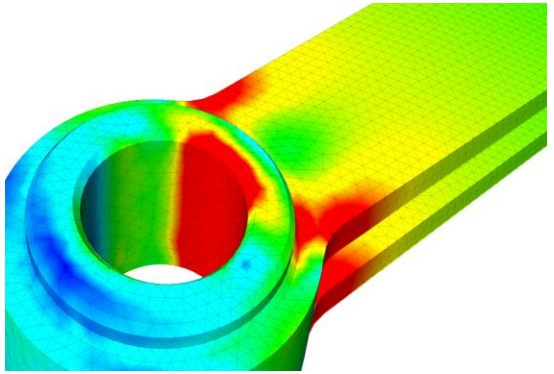
Mechanical and Opto-Mechanical Engineering



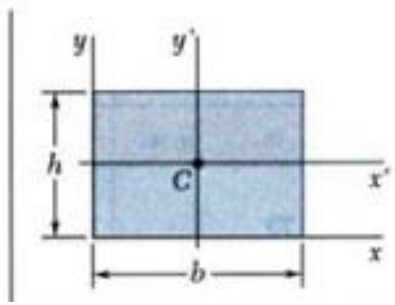


Skills I use every day

- Communication! – A Bitter Sweet Surprise
- Heat Transfer
- Solid Mechanics / Statics
- Apply understanding of mathematical relationships (linear, quad, cubic)
- Learning new software programs
- Organization – if its not documented, its not done.



Rectangle



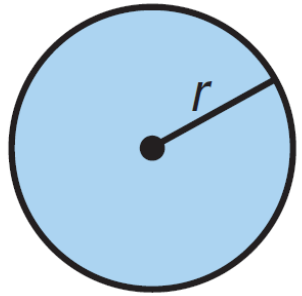
$$\bar{I}_{x'} = \frac{1}{12}bh^3$$
$$\bar{I}_{y'} = \frac{1}{12}b^3h$$
$$I_x = \frac{1}{3}bh^3$$
$$I_y = \frac{1}{3}b^3h$$
$$J_C = \frac{1}{12}bh(b^2 + h^2)$$

Heat Transfer Mechanism	Governing Equation
Conduction	$Q = kA\frac{T_2 - T_1}{L}$
Convection	$Q = hA(T_2 - T_1)$
Radiation	$Q = \varepsilon\sigma A(T_2^4 - T_1^4)$
Heat Absorbed	$Q = mc_p(T_2 - T_1)$

radius r

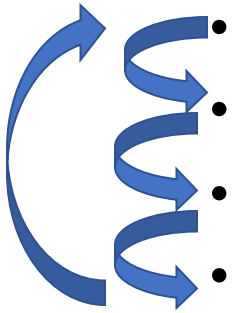
$$C = 2\pi r$$

$$A = \pi r^2$$



How Teachers can Support Students

Teach Engineering Design Process in Projects



- Brainstorm, understand the problem
- Build Prototype
- Test
- Record and reflect upon results

Frame math with real world applications

Encourage Interschool collaboration (ex: work within districts)

Resources and Opportunities

- Free Web-based Optics Simulator (Ray Optics Simulator)
  - https://ricktu288.github.io/ray-optics/
- Virtual STEM events (1.5hr = 45 min activity, 45 min of presentation), evan.g.wong@lmco.com
- Group that supports students building their own computers (east coast based)
- High School and College Internships (year-round / summer)
- What Type of Engineer you should be – I am suppose to be an aerospace engineer
  - https://www.lockheedmartin.com/en-us/news/features/2017/engineer-quiz-eweek.ht5ml
- Virtual Green Summit (6th-College Students)– October 24th
  - http://events.r20.constantcontact.com/register/event?oeidk=a07eh9hdvc101c3225b&llr=44lsyfeab
- Engineers in the Classroom website, ideas / materials for STEM related activities
  - https://www.nationalgeographic.org/education/engineers-in-the-classroom/