Michael Mong
Rising Junior at Carnegie Mellon University studying Mechanical Engineering with a passion for product design and robotics. My portfolio and resume can be found at www.mmong.me.

SUMMARY

3 Years of FIRST Robotics Experience as a part of 2014 World Championship Team 2848, The All Sparks:

- Design experience leading prototyping teams
- Manufacturing and Machining
- Leadership and Mentoring

2 years of work experiences of REV Robotics:

- Can design, manufacture, document, and program real products for market.

1 year of work experience at IDeATe

- Tech Advisor who assists students with using IDeATe facilities
- Help students complete their projects
- Teach a Solidworks and Laser Cutting class
- Helped restructure curriculum to reduce confusion
- Conduct maintenance on lasercutters and 3-D printing

1 year volunteering at project IGNITE

- Mentored a group of high schoolers to redesign a new household object

1 summer of research at the University of Texas at Dallas

- Can do academic research

1. Skills

Software

- Certified Solidworks Associate with 5 years of experience.
- Python
- Java
- C++
- MATLAB

Manufacturing

- Laser Cutting
- 3-D Printing
- Lathe
- Mill
- Drill Press
- Sheet Metal

2. FIRST ROBOTICS
   I participated in FIRST Robotics for three years as a member of the 2014 World Championship winning team 2848, The All Sparks. During this time I was able to serve as a Pit Crew Lead, a Design Team member, and as the elected President/Captain.

   During my senior year I served as a mentor to both a middle school FIRST Lego League team as well the four FTC teams our FRC team created at our high school in addition to my responsibilities as Team Captain and as a Design Team member.

   While here I learned:
   - Computer Aided Design with Solidworks
   - Sheet metal machining basics
   - How to use a mill and a lathe
   - Laser cutter operation
   - Prototyping Skills
   - Leadership

3. REV Robotics
   I have spent two years working at REV Robotics, a supplier of robotics parts for the FIRST Tech Challenge (FTC) competition. During this time I have designed various FTC robots to help determine number of parts per kit as well as help troubleshoot issues to determine if new parts should be added.

   I also worked to helped REV Robotics become more usable in education by creating step by step build guides for basic robot drivetrains which could be used in competition to help beginner teams. Additionally, I proposed changes to an educational use robot kit which resulted in increased durability and safety.

   While at REV I also created robots which helped show the system's potential outside FTC, most notably a rubric cube solver and a functional WALL-E robot. Both these robots were designed, assembled and coded by myself.

4. IDEATE
   While a student at Carnegie Mellon I also work as a Tech Advisor in IDeATe, Integrative Design, Arts, and Technology, department where I assist students with using IDeAte's resources(laser cutters and 3-D printers) as well as preform maintenance on these machines to ensure that they are always available for students to use. Additionally, I help students figure out how to best implement their ideas for projects.

   I also serve as an IDeAte Teaching Assistance where I help teach the Solidworks and Lasercutting class. In addition to helping answer questions and guiding students through the exercises, I also helped redesign the curriculum and helped students complete their final projects.

5. Project IGNITE
   I served as a volunteer mentor to a team of high school students and provided guidance as they embarked on a project of their own choosing, redesigning a common household object to better fit their needs.

6. Research at Univeristy of Texas at Dallas

   I have had experience with less common methods of fabrication and actuation through my research at the University of Texas at Dallas. While there, I created robots out of tensegrity structures which were flexible and adaptive while able to absorb high impacts.(The NASA Super Ball Bot is an example) We attempted to improve upon these types of robots by replacing the typical strings which keep the structure together with nylon-66 artificial muscles which contracted when an electrical current was run through them and adapted over time to accommodate the strain they are put under. By integrating the muscles, we were able to create lighter and more compact robots as the tensioners were also the actuators and thus additional motors were unneeded. At the end of the summer my partner and I presented our findings at a public symposium.