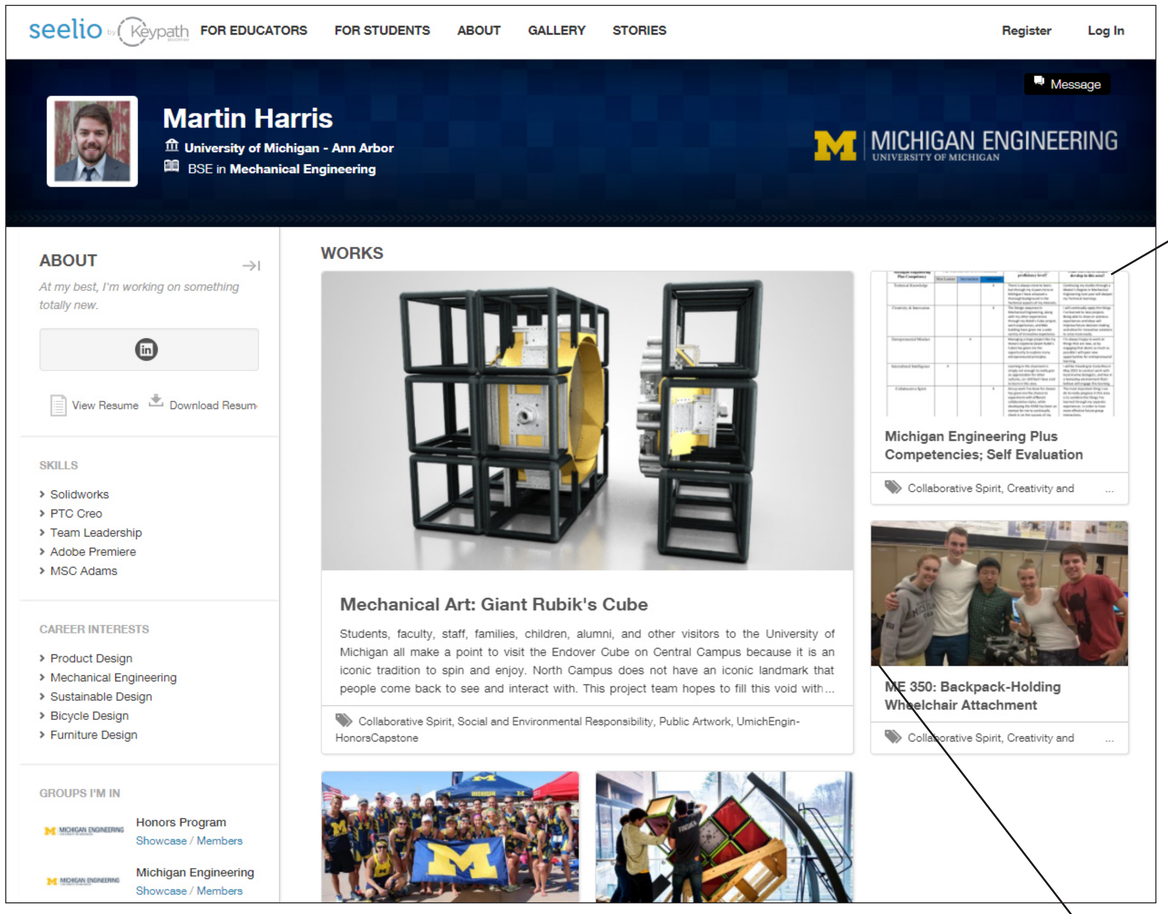
seelio

Martin Harris

Seelio partners with several University of Michigan departments and colleges. Students display coursework, professional accomplishments, and personal reflections in a rich multimedia format. Instructors can create private groups for courses and use ePortfolios to assess student outcomes.



ME 350: Backpack-holding Wheelchair Attachment

Overview

ME 350 is the second Design-oriented course in the Mechanical Engineering curriculum. It is structured such that each term students form 4-member teams and work together to design, build, and test a prototype device to complete a specified task.

When I completed ME 350, the project was to design an attachment for a wheelchair that would assist students with limited upper-body mobility by moving a backpack from behind the seat to an accessible position at the chair's side.

Key Tasks

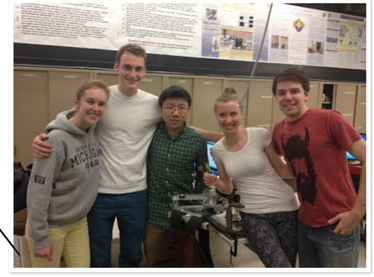
- Conceive basic designs individually
- Merge ideas as a team to form one final design
- Divide and conquer the work of machining the device on schedule
- Design and implement control system
- Write 3 papers as a group throughout the process

Skills Gained/Lessons Learned

- *Communicating effectively outside of group meetings:* By constantly keeping in touch we were able to stay on schedule even when our individual work loads got strenuous and group meeting time was hard to come by.
- *Using limited time efficiently, both in and out of meetings:* One especially limiting factor was time in the machine shop and mechatronics lab. It was essential for us to be responsible for separate tasks in order to get everything done. The fact that we were able to trust one another, and that we were organized enough as a group so that no one was ever left behind made the division of labor a viable and efficient option.
- *Capitalizing on individuals' strengths:* While I know that I have advanced skills in machining processes and troubleshooting areas, my teammates were not all the same. One is especially adept at organizing written work and scheduling work plans, while another is better at modeling and design work, and the fourth is very skilled in mechatronics and coding. So while we found that we were all capable of the necessary tasks and attentive enough not to fall behind, it was often advantageous to have one team member leading a segment of the work at which they were most skilled.
- *Having FUN and how it can make everything better:* My teammates and I became close friends throughout the course of this project, and we all found that it made the entire experience better in every aspect. By building relationships with each other we quickly came to trust each other's judgement, which made decision making a less stressful process, and there was never any tension related to commitment to the team or work quality. We also found that because we always had so much fun working together, our positive attitudes were reflected in our project work.

Importance/Impact

I am already cognizant of the fact that I am a very extroverted person, so it is unsurprising that collaboration is so important to me. Nevertheless, I found this course project experience enlightening with respect to how the benefits of good collaboration can be manifested in the work at hand. I have always liked to work with other people, but I have never been a part of such a fluid, seamless team that seemed (pun intended) to demonstrate all the characteristics of good teamwork at once. After completing this project (and having been a part of less successful groups in the past) I feel that I have a much better understanding of what success in collaboration looks like, and what the steps to achieving that success are. I also underestimated the value of forming personal relationships with teammates and group members.



MICHIGAN ENGINEERING
UNIVERSITY OF MICHIGAN

Michigan Engineering Plus Competency	My Current Level of Proficiency			Why did I select this proficiency level?	What will I do to further develop in this area?
	New Learner	Intermediate	Advanced		
Technical Knowledge			X	There is always more to learn, but through my 4 years here at Michigan I have amassed a thorough background in the Technical aspects of my interests.	Continuing my studies through a Master's Degree in Mechanical Engineering next year will deepen my Technical learnings.
Creativity & Innovation			X	The Design sequence in Mechanical Engineering, along with my other experiences through my Rubik's Cube project, work experiences, and Bike building have given me a wide variety of innovative experience.	I will continually apply the things I've learned to new projects. Being able to draw on previous experiences and ideas will improve future decision making and allow for innovative solutions to arise more easily.
Entrepreneurial Mindset		X		Managing a large project like my Honors Capstone (Giant Rubik's Cube) has given me the opportunity to explore many entrepreneurial principles.	I'm always happy to work on things that are new, so by engaging that desire as much as possible I will open new opportunities for entrepreneurial learning.
Intercultural Intelligence	X			Learning in the classroom is simply not enough to really gain an appreciation for other cultures, so I still feel I have a lot to learn in this area.	I will be traveling to Costa Rica in May 2015 to conduct work with local marine biologists, and live in a homestay environment that I believe will engage this learning.
Collaborative Spirit			X	Group work I've done for classes has given me the chance to experiment with different collaborative styles, while developing the HSAB has been an avenue for me to continually check in on the success of my endeavors in a group setting.	The most important thing I can do to really progress in this area is to combine the things I've learned through my separate experiences in order to have more effective future group interactions.
Social & Environmental Responsibility		X		Completing coursework for the PiSE Program has given me background in both the social and environmental sides of Sustainability. My background was initially in environmental only, but the Architecture class I took made me really appreciate the importance of responsible social culture.	Bringing my learnings to life through the projects I take on in the future will be the best way to develop my understanding of how to design responsibly in real situations.
Effective Communication		X		I've learned a lot through all of my coursework as an undergrad, and gotten experience communicating in a variety of methods for a variety of different purposes.	As I spend more time in a work environment I will have more chances to see the impacts and results of my communication. This will allow me to better gauge what I am doing right, and what I can do to be more effective.

Michigan Engineering Plus Competencies; Self Evaluation

Academic Goals and Coursework:
Major: Mechanical Engineering

Focus Area: Sustainable Design
- ME 433: Advanced Energy Solutions
- CEE 265: Sustainable Engineering Principles
- Arch 357: Architecture, Sustainability, and the City

Honors Capstone:
- I am currently in the second term of work designing and building a large-scale functional Rubik's Cube as a piece of public artwork for the College of Engineering
- I hope to complete the project by May 2015

Minor: Mathematics
- Math 115 (Calculus I AP placement)
- Math 156: Applied Honors Calculus II
- Math 255: Applied Honors Calculus III
- Math 217: Linear Algebra
- Math 425: Introduction to Probability
- Math 316: Differential Equations
- Math 463: Mathematical Modeling in Biology

Other: Program in Sustainable Engineering (PiSE)
- CEE 265: Sustainable Engineering Principles
- ME 433: Advanced Energy Solutions
- Arch 357: Architecture, Sustainability, and the City

Future Goals & Plans:
Education
I have been accepted to the Mechanical Engineering SUGS (Sequential Undergraduate Graduate Study) so I plan to stay in Ann Arbor for a 5th year of school to complete a Master's Degree.