

PROJ 04

Robots

due 10 dec 2019

*If all of a sudden
someone just stopped the production of Robots,
that would be a terrible blow to mankind.*

– Helena and Dr. Gall in Karel Čapek's R.U.R.

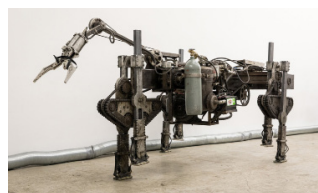
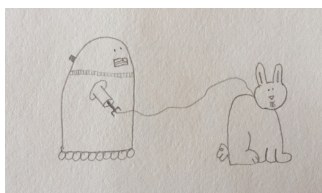
This is a team design project focusing on robots as a creative material. Reflect for a moment on our readings, classroom discussions, and expert perspective. How will robots cohabitate with us? What role will they play? When? Where? Why?

Will they be independent and autonomous? Will they watch and learn from us, offering aid and assistance when we need it? Will they have personalities? As a designer, your role will be to take a stand and bring to life a glimpse of the user experience you envision for us and robots in the future — or why not now?.

Our platform is a powerful, programmable Husqvarna Automower. This robot is designed to navigate over rough and steep terrain outdoors as it readily handles the automated task of mowing grass lawns. For safety, we have removed the cutting blades. Your challenge is to envision what this remarkable platform can do beyond this task. As a robot, what does it really desire to do? Most robots cannot navigate rough terrain and your design could take advantage of that strength in this robot. You are encouraged to blend and collage the materials across our course – vision, speech, and VR. Could the robot use vision to search for weeds and selectively remove them? Or rather could it locate and selectively nurture, water, or fertilize a food crop by position, by color, or by type? Could it locate ripe fruits and harvest them? Or does it search and daydream endlessly across a field of clovers pining for a four-leaf clover? Think beyond landscaped lawns and begin to consider community gardens, aiding pollination, clearing ivy from sidewalks, forestry management, micro-agriculture, drainage, composting, etc.

Consider engaging with other applications such as small-scale agriculture. The term microfarm is used to describe agriculture that is done on a smaller scale in urban and suburban areas. Microfarms are some of the best types of gardens you can build because they are helpful, sustainable, environmentally friendly, and a great way to increase agricultural output in our modern lifestyle.

But you may also want to explore the robot in other contexts. Can it navigate urban areas and map and confirm accessibility routes for people? Can it be told to clean up or rearrange a lab or classroom by gently nudging chairs and tables into position? Can it help walk your dog? Could it assist in carrying or transporting things for people? Why? When? How? Side note – please do not recreate a Kiwibot. Again thinking of our other course creative materials – does it see and interpret the world in any way? Does it converse with you or others? Does it extend or complement a VR experience?



You will have a wider design latitude to explore in this final project. You are encouraged but not required to engage with the other materials from previous class projects. Your final design must deeply engage with the mobility of the robotic platform. Make sure your design could not simply be accomplished some other way without mobility. You will likely need to augment the robot with some additional sensing or actuation. As such, you will want to take care in how you iterate and develop your final form. Feel free to prototype with paper, cardboard, and foam-core. Will your final form be industrial? Playful? Approachable? Foreboding? **As a guide to allocating your time on this project, focus less on polished visual fidelity and more on the form, meaning, interaction, and message. Given the time constraints, you will need to present a sketch of your final design, selectively choosing to detail the major movement and interactive elements that guide our understanding of the work and engagement.** You will not (nor do we expect) an entire system. However, your project should demonstrate the first foray of a discussion into what is hopefully a new and rich interactive experience for robots within our world.

There are a few other constraints to keep in mind as you develop your project. You must use the Husqvarna Automower as your point of experience in this work. Mobility must be a central element of the work. Finally, since there is only one Husqvarna Automower per team, you will need to divide the work and skills needed for a successful project. Within your final process document, you will need to outline the roles of each team member's participation in the final work.

Your team will be required to deliver an 15-minute presentation communicating:

- documentation and images of your robot studies and investigation
- motivation for your design (why should we care?)
- a brief demo in class of your working prototype (robot demonstrating interaction)
- a brief video (2 min max) of your robot in situ

You will need to hand in the following materials online via bCourses:

- a title for your project
- a single representative image (landscape at 1600:900 pixels jpg or png)
- one paragraph of text describing your project (max of 150 words)
- a stand-alone video describing your project and showing it in use (2 min max)
- your observational documentation that includes:
 - design process documentation (intermediate designs, sketches, ideas)
 - team roles and contribution
 - final designs
 - future opportunities

Grading:

- 40% Quality and originality of idea
- 25% Execution of object design and interactivity
- 15% Critique Presentation
- 10% Video