



Evaluating Robotic Solutions for Underway Ship Hull Cleaning



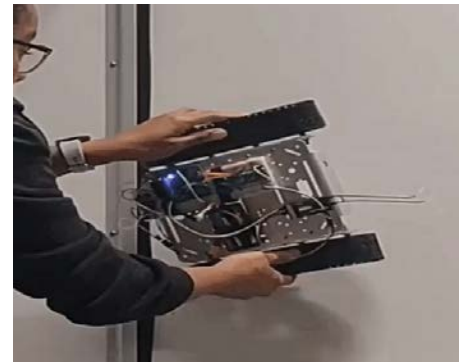
Lauryn Whiteside¹, Dr. Michael Bell², Prof. Robert Wood²

¹Worcester Polytechnic Institute, ²Harvard John A. Paulson School Of Engineering And Applied Sciences
NSF DMR-1559890

- This work helps to enable a new robotic system to clean ship hulls effectively while moving and limit introduction of non-native invasive species into port ecosystems during cleaning.
- To accomplish this I have:
 - Designed a system to accurately test prototypes in 3 dimensions.
 - Determined force and wiper configurations to effectively remove microorganisms (biofouling) from ship hulls.
 - Designed a tank robot to drive on metal surfaces (like a ship hull) for comparison to a novel locomotion design.



Upper left: Biofouled plate with two wiped sections at 10 lbs of force. Lower left: 3D printed (left) and injection molded (right) sample magnetic tracks attached to metal surface. Lower right: Tank robot driving on metal door.





Evaluating Robotic Solutions for Underway Ship Hull Cleaning



Lauryn Whiteside¹, Dr. Michael Bell², Prof. Robert Wood²

¹Worcester Polytechnic Institute, ²Harvard John A. Paulson School Of Engineering And Applied Sciences
NSF DMR-1559890

I am a rising senior majoring in Robotics and Mechanical engineering at Worcester Polytechnic Institute. I am originally from Buffalo, New York. Outside of this program I do research in soft robotic mechanisms with a focus on manufacturing techniques for soft robots and soft fluidic logic. Spending this summer at Harvard has helped to solidify my passion for research and build my skills in engineering design and rapid prototyping. This experience has given me more confidence in my engineering and research skills as I prepare to apply to PhD programs in robotics and engineering in the fall.



Top: Lauryn Whiteside working on electronics for tank robot with magnetic tank tracks.
Bottom: Lauryn (left) and her mentor Michael Bell (right).

