

MIT AT Challenge

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Assignment : Brainstorming document

User Need:

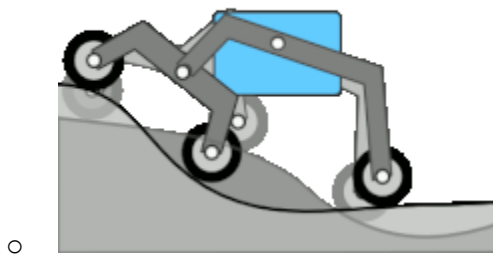
- 99% of housing is not wheelchair accessible (Urban Land Journal)
- 65% curb ramps and 48% sidewalks are not wheelchair accessible (Elsevier)
- The current/traditional model of (non-electric) wheelchair requires a caretaker or strenuous upper body effort to move
- our codesigner needs a mobility aid that allows her to access more areas and deal with obstacles effectively

Ideas:

- tank treads to put on electric wheelchairs for stair-climbing purposes?
- wheelchair with legs (like a dog robot but with a chair and stabilization)
- wheelchair but in addition to wheels you add legs so there's also stair climbing ability.
quadrupedal design

storyboarding for the function of our product, click on the link to view our brainstorming summary in animation:-)

- comprehensive assistive technology mobility system that uses AI and deep reinforcement learning to improve user's experience
- modular system: top half is a light, removable chair, bottom half equips four/six wheeled legs to allow users to navigate more terrains?
 - we could co-opt the mars rover "rocker bogie" suspension design for smoother travel



- - chassis maintains average of the rockers. the gif is slightly off
- sensors+ai cameras for obstacle detection?

Assignment: External Search

Robot	Cost	Stairs	Rough Terrain	Omni Directional
Extreme X8 All-Terrain Power Wheelchair	\$23,499	x	yes	x
Action Trackchair Axis 40	\$19,400	x	yes	x
ClimbEase	\$7,500	yes	x	x
Our Design	?	yes	yes	yes

Conclusion: There is currently no product out there on the market that provides the functionality we envisioned. Our design (Rover) would cut down on costs not only by being cheaper but also allowing the user to move away from high-dependency caretakers (which are more expensive)

We would like to build a fully functional prototype in MIT AT Challenge and also maybe investigate the true cost of manufacturing.