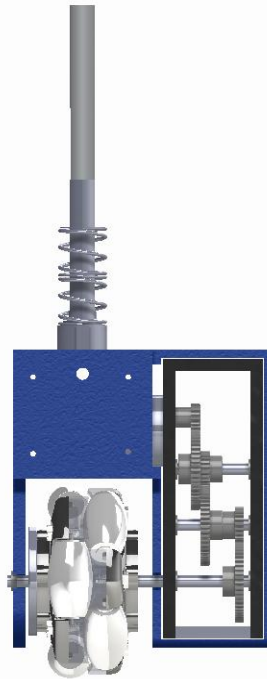


RoboClaw, Arduino, and remote contained inside electronics box



Assistive anti-tipper and its CAD model



Assistive Mobility Product Development

California Institute of Technology, Rancho Rehabilitation Facility, 2018

Current anti-tippers not only serve the safety function of preventing backwards tipping of the wheelchair, but they also allow wheelchair users to go up curbs by popping a wheelie and to relieve pressure from parts of their body by tilting the chair to a different angle. I worked with two other classmates to create detachable, powered anti-tippers that would assist in relieving shoulder stress from wheelchair users, especially when going over rough or uphill terrains. We collected surveys and feedback from Rancho patients and staff to assess their needs and determine the most ergonomic design.

We incorporated a spring into the anti-tipper that would allow for an omni-wheel to maintain contact with the ground for propulsion but allow the device to still retain anti-tipper functionality when the wheelchair user tilted backwards. The driving was commanded by joystick and programmed with Arduino. Many people indicated that our device would be desirable when we presented our product at the Aging into the Future Conference in LA 2018.



Traditional anti-tippers



Wheelchair power assist on market for \$6000