Grapple gun

Callie Butash
Science & Engineering
Manalapan High School
Englishtown, NJ
426cbutash@frhsd.com

Srilekha Dantu
Science & Engineering
Manalapan High School
Englishtown, NJ
426sdantu@frhsd.com

Connor Paszkiewiecz
Science & Engineering
Manalapan High School
Englishtown, NJ
426cpaszkiewiecz@frhsd.com

Abstract

We are designing a functional grapple gun inspired by Spider-Man's ability to retrieve objects from a distance. We are looking to translate this fictional ability by developing an efficient launching and grabbing tool that will be able to launch across a room, latch onto a handheld item, and pull the item back to the user. The mechanism will launch an individual clasping system, inspired by bear traps and other spring-loaded traps, connected to a rope for retrieval. We will explore the kinematics and forces required to launch the claw to a desired item, as well as the processes involved in bringing the item back. A tool like this can be helpful when trying to reach trash and dropped belongings from high places, assisting the physically impaired, and reaching the remote without getting off the couch.

Part of our design process will consist of looking at what exactly makes for an optimal grapple design, and if that changes depending on the use case. We could consider different mechanisms for the use of a first responder compared to grandparents. We plan to experiment with claw designs, different strengths and size of rope, and manual vs. automatic launching and retraction.

Index Terms

Spiderman, grapple gun, engineering design, assistive technology, superhero, super-ability