Pedal Switch

introduction to assistive technology final project
ruyang zheng

early inspiration

universal life experience during the pandemic
blurry boundary between *able-bodied* and *disabled*

hand contact in public spaces
sensor-activated faucets and hand dryers in public restrooms ↘

glitchy detection / break frequently

feet ↘ still temporarily in the covid context

safe yet physical contact ↘

Pedal Switch

main feature / highlight

quite a number of existing pedal switches for various purposes both in the general market for racing video games, e.g. and in the adaptive design market although I never mean to draw a clear line between the two

cost way too much
only offers simple on/off toggle function

↘
ability to deliver progressive output signals across a wide gamut

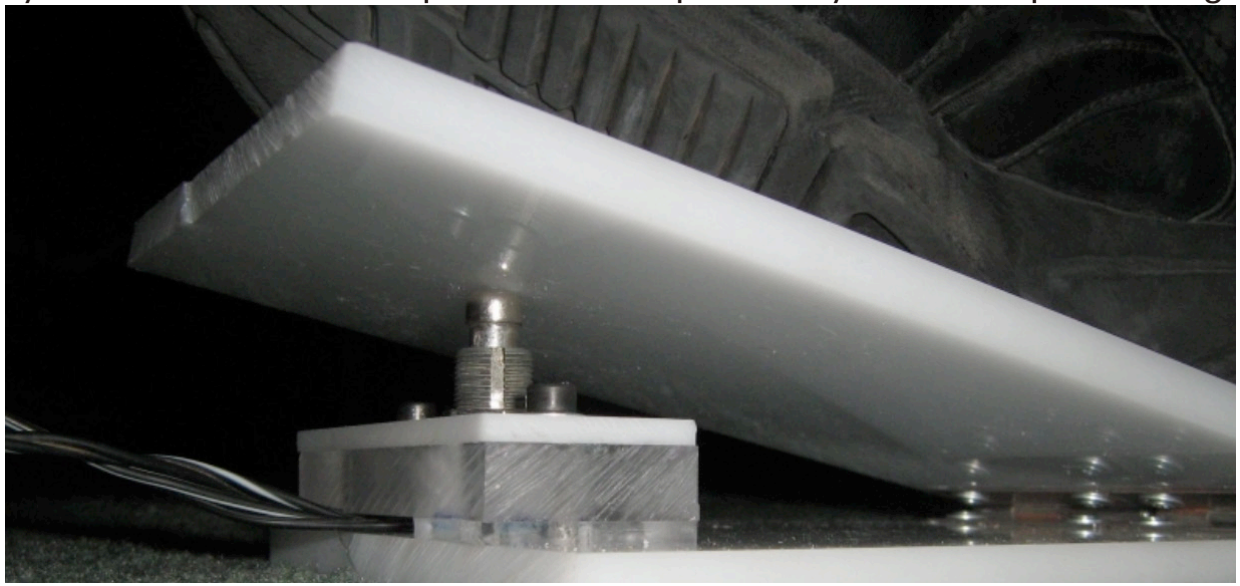
0 0.1 0.145 0.34 0.51 0.590.7 0.852 0.93 1

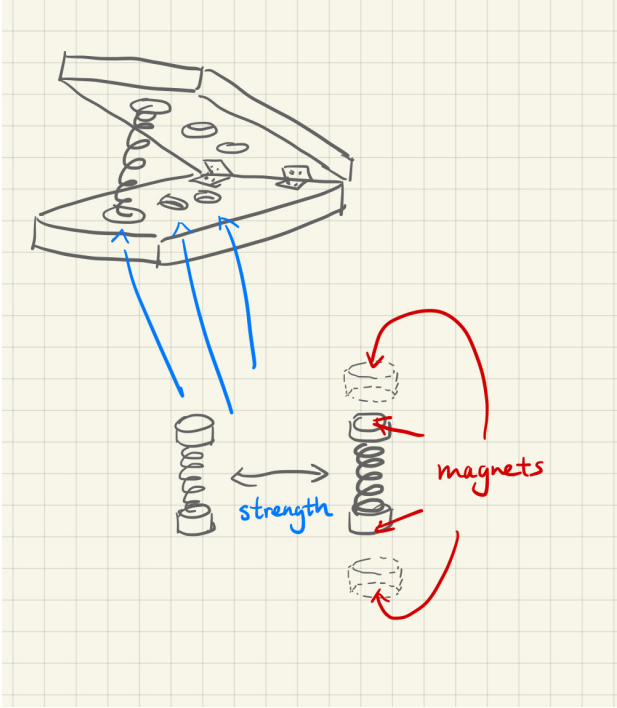
existing reference

two pieces of acrylic sheets
hinges on one side
spring & simple toggle switch on the other side

a very practical, robust, efficient example

https://hackaday.com/2015/07/12/foot-pedal-switch-specifically-made-for-pcb-drilling/





fundamentals & later developed ideas

- pedal base & pedal
- hinges on one side
- spring
- switch / sensor ↘

generic pressure sensor
load cell sensor

↙

complex mechanism / sensor & spring always bound together

digital distance sensor

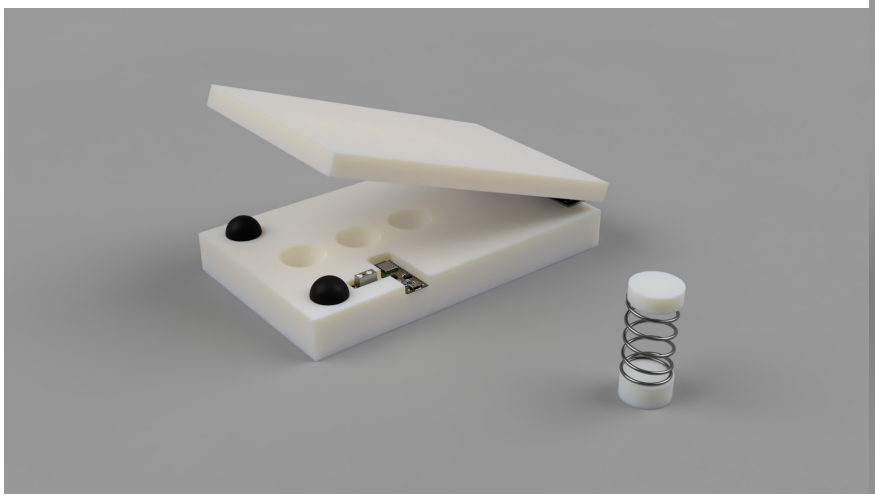
distance between the base and the pedal

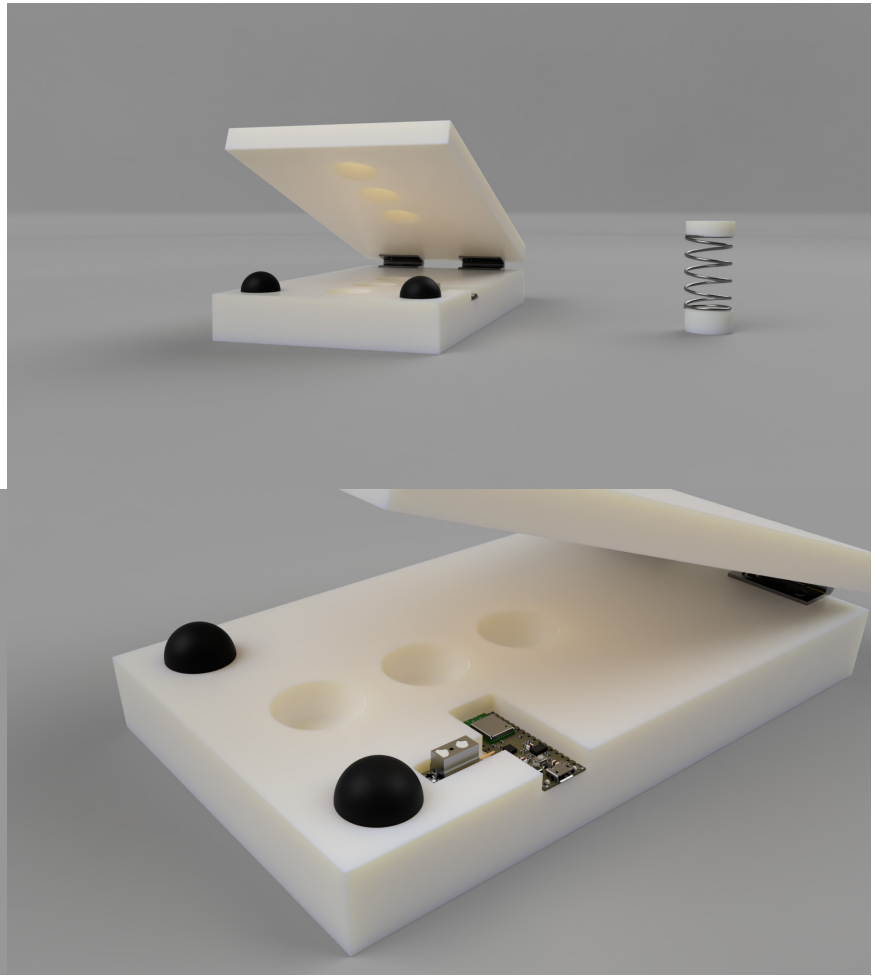
customizable / interchangeable ↘

different angles / forces

Fusion demo

test renders





prospective use cases

1. low-cost video game controller
2. smart light bulb fine tuning
3. water faucet control
4. musical instrument

. *more ...*