Documents of 02/29/2020 Brainstorm(Liang, Yuebing, Yawen) on application ideas of Kinergy

Key word: **State switch**

1. Objects are in multiple states when used/not used
2. Switching to a different state requires energy, which is stored in spring mechanisms
3. The working state occupies a period of time functionally with locking mechanisms

Examples:

1. Toaster: with a spring loaded tray to press the raw bread in/bounce the baked bread out

<https://www.howitworksdaily.com/how-do-toasters-work/>

1. Measure tape: each time when the measure tape is extended, it gets locked at a specific length. The tapes can be automatically rolled back into the shell when the release button is pressed.

<https://thekidshouldseethis.com/post/whats-inside-of-a-tape-measure>

1. Umbrella: fold and unfold an umbrella
2. Spring chairs with adjustable cushion angle (like chairs on an airplane): push down/bounce up the back of the seat
3. Window blinds: roll up and release down the window blinds

Key word: **Impulse accumulation and instant release**

1. The input is a series of low-power motions like winding the spring
2. The locking mechanism stores and accumulates the energy
3. Short-time release of the energy can acquire instant high-power work

Examples:

1. Toy bomb: <https://www.thingiverse.com/thing:3828736>
2. Rocket/fireworks/alarm clock… etc.

Key word: **Motion change for accessibility**

1. Imagine people who can not open a jar with two hands or people can only do pushing movement but not pulling. Using spring mechanisms to store energy can change one type of input motion to another type of actuator motion.

Like a disk tray of CD player: Users only need to *push* in the tray and *press* a release button to let the tray eject out. They do not have to *pull* the tray out by hand.

1. Wheelchairs with spring lift mechanisms for stair climbing:

<http://www.tuvie.com/boomer-a-user-friendly-walking-aid-for-eldery-people/>

Key word: **Stable power actuator**

Like the mechanical watch: the energy stored by spring mechanisms can be released with a stable power actuator controlled by escapement mechanisms.

Examples:

1. Cradle pusher
2. Music box: <https://www.pinterest.com/pin/217932069453975512/>

(Also inspiring for parametric design: the melodies and rhythms can be customized)

1. Grill rotisserie

Key word: **Kinetic Sculpture**

1. 3D printed kinetic sculpture: <https://www.pinterest.com/pin/295759900529211643/>
2. Kinetic Sculpture: <https://www.thingiverse.com/thing:2542655>
3. Mechanical sculpture: <https://www.pinterest.com/pin/11892386494394494/>
4. Gearbox sculpture: <https://www.pinterest.com/pin/430938258094970514/>

Key word: **Kinetic Wearable**

1. Kinetic finger: <https://www.thingiverse.com/thing:1737001>
2. Kinetic jewelry: <https://vimeo.com/92031086>
3. Robotic arm: <https://www.pinterest.com/pin/467600373807003716/>
4. Robotic arm: <https://www.thingiverse.com/thing:56946>

Key word: **Kinetic furniture**

1. Self-dimming lights: <https://www.designcommunication.net/design/best-examples-of-kinetic-design>
2. Kinetic furniture: <https://www.kickstarter.com/projects/1199521315/sisyphus-the-kinetic-art-table>
3. Kinetic lights: <https://www.urdesignmag.com/design/2018/04/20/raw-edges-unveils-a-kinetic-light-installation-at-milans-spazio-krizia/>

Key word: **Kinetic toy**

1. Dog coin money bank: <https://www.pinterest.com/pin/AbLl6jxkCF7gDy1g10ajJ6HT0GCqMRxtXpVCBUyvO-RoIdCuPmf7dZR5ZCam5INjAVYcRFWAodE1VAElB7lql4A/>
2. Motorized, Articulated T Rex(ish) Pin Walker: <https://www.instructables.com/id/Motorized-Articulated-T-Rexish-Pin-Walker/?linkId=75872964>
3. Mechanical fish (kinetic art): <https://www.pinterest.com/pin/413627547018801231/>
4. Spring Ballerina Wooden Toy: <https://grabcad.com/library/spring-ballerina-wooden-toy-1>
5. Solar system for education: <https://www.shapeways.com/product/CHKQG87NU/solar-system>
6. Catapult: <https://www.pinterest.com/pin/407716572513473279/>
7. Pull-back car <https://www.thingiverse.com/thing:3616315>
8. Cannon lift: <https://www.thingiverse.com/thing:3750781>
9. Spinning gyro: <https://www.pinterest.com/pin/155303887187391217/>

Key word: **Kinetic Tools/Mechanisms**

1. Clock: <https://www.pinterest.com/pin/421931058812627740/>
2. Stapless stapler: <https://www.pinterest.com/pin/495818240228143998/>
3. Walking Machine: <https://www.pinterest.com/pin/740208888727804561/>
4. Robot: <https://www.pinterest.com/pin/479703797779512217/>
5. Fan: <https://www.thingiverse.com/thing:952564>

<https://www.youtube.com/watch?v=l1YajkmqFpw&feature=youtu.be>