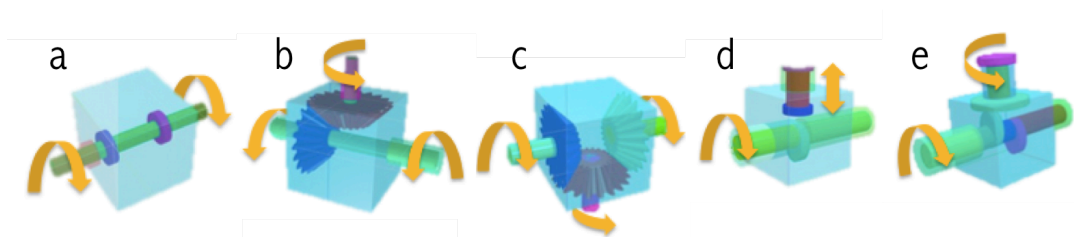


# GearBox Simulator

## Description

Automata design involves basic movements unit such as crank slider, cam, gear, linkage etc. As part of my dissertation thesis, I am developing web based application name called Kinemaker (is part of <http://craftml.io>), provides set of movement units as cubic module, enabling 3D host objects downloaded from elsewhere (such as SketchUp 3D warehouse, Thingiverse, etc.) to host movement unit inside. Kinemaker so that finally creates solid movable 3D models. I plan to develop a mobile application that simulates automat movements along with gearboxes unit, projecting that each unit's different movement affects to the host 3D object's movement.



**Figure 1. Movements unit embedded into 3D host object and allows host 3D object movable.**  
(a)linkage, (b)jumper gear, (c) friction gear, (d)crank, (e)double cam

## UI components

- Segment Control



Enable users to choose options in range of host 3D models. Kind of host 3D objects (numbers of options N) could be vary based upon time constraints of the project, and the number of images I could attach to the project

- Buttons



This will be projecting designated gear units inside host 3D object in sequence. The number of gears (M) will be also vary (I am currently thinking only 3 units, not all 5 as shown in figure1 for now)

Finally, the kinds of possible simulations will be N by M.



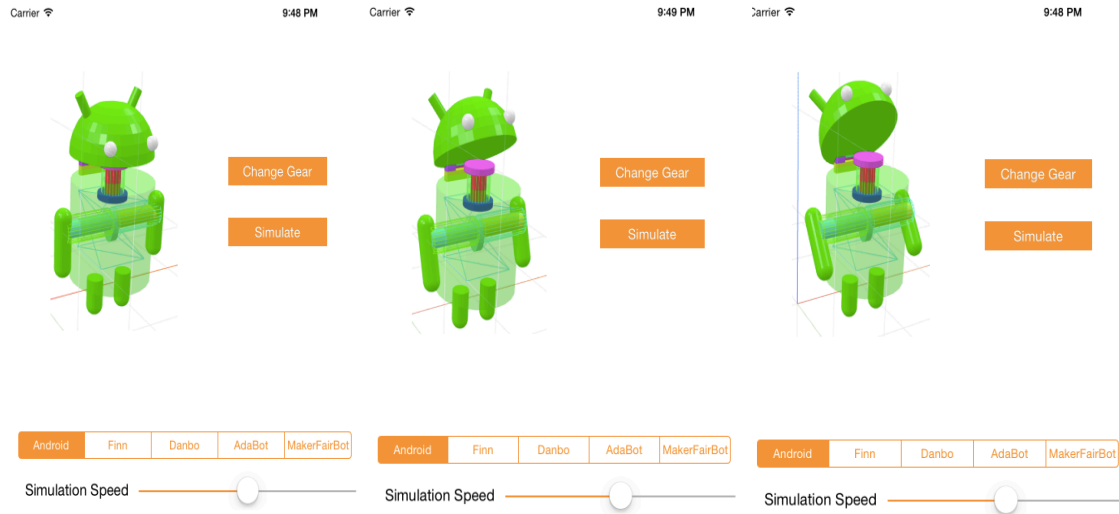
Image view shows set of images in loop of regulated frame rate, so that it seems to be simulating movements in the selected host object, projecting movement of selected gear units

- Slider

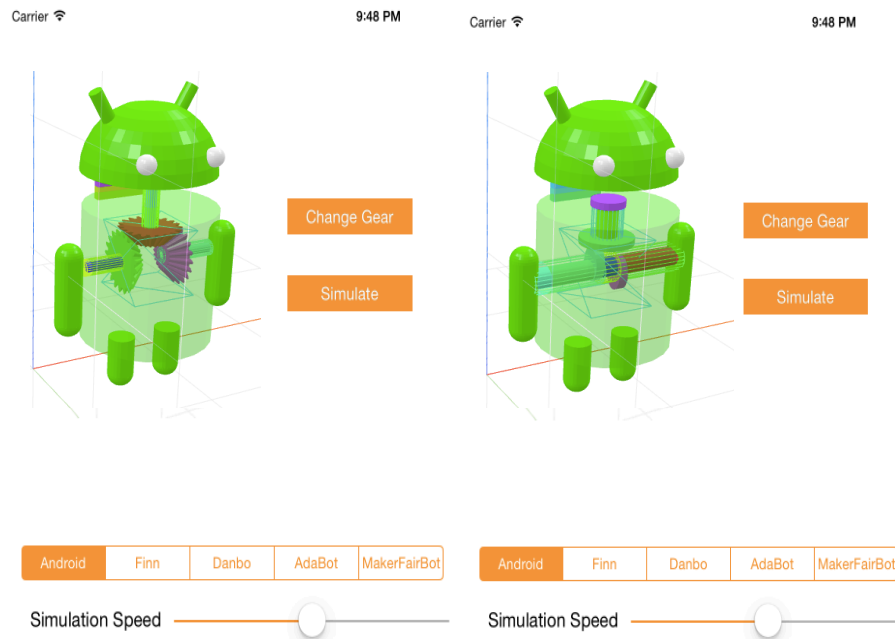


This will change the delay between images set to change simulation speed

## UI Sketch



**Figure 2. Robot automata simulations, with movements of rotating arm and opening/closing mouth as time passes.**



**Figure 3. The android bot with different inner gearbox projected into the body. When the inner structure of gear is changed to friction gear(left, Figure.1c), double cam(right, Figure.1e)**