Mechanical Alignment Ideas

1. Aligning the “wrist adapter” to the “clasper”

* How do we ensure that the “clasper” axis of rotation is exactly centered in both X and Y
* IDEA:
  + Place assembled “clasper” on a stiff block
  + Fix the motor position using duct tape
  + Trace out the motor position on the block
  + Bring “clasper” position to be parallel with the motor
  + Power on motors to fix “clasper” position
  + **Mark the positions of the cube contact pads**
  + Rotate “clasper” 180 degrees
  + Mark new position of the cube contact pads
  + Repeat the above steps after rotating the “clasper” 90 degrees
* Use the above idea to gauge adjustment range needed. Design a “wrist adapter” with alignment capabilities.

1. Using the “aligning adapter”

* IDEA:
  + Measure and mark off the center of a cube-face
  + “clasp” the cube using servo
  + Maintain engaged position of servo using pwm
  + Using a card-board right-angle ruler, mark off position on wrist
  + Repeat for 90deg rotated

1. Aligning the stepper motors to each other in the housing

* IDEA:
  + Execute alignment step (1)
  + Use a wooden piece to align motor B to the housing in perpendicular sense
  + Grasp cube with motor B
  + Gauge whether or not motor A can be aligned with the current slots

1. Preventing Cube Droop

* IDEA:
  + Glue magnet to perpendicular support surface
  + Glue metal piece to inside of cubies

1. Measuring Misalignment and Cantilever Effect

* IDEA:
  + Tape magnets onto both claspers
  + Attach fully housed claspers to the steppers
  + Orient them to be aligned in the angular sense to the cube
  + Power on the stepper motors to fix angular position
  + Make note of any flexing in the claspers due to the magnets
  + Rotate 180 and mark off the positional offset on the cubie