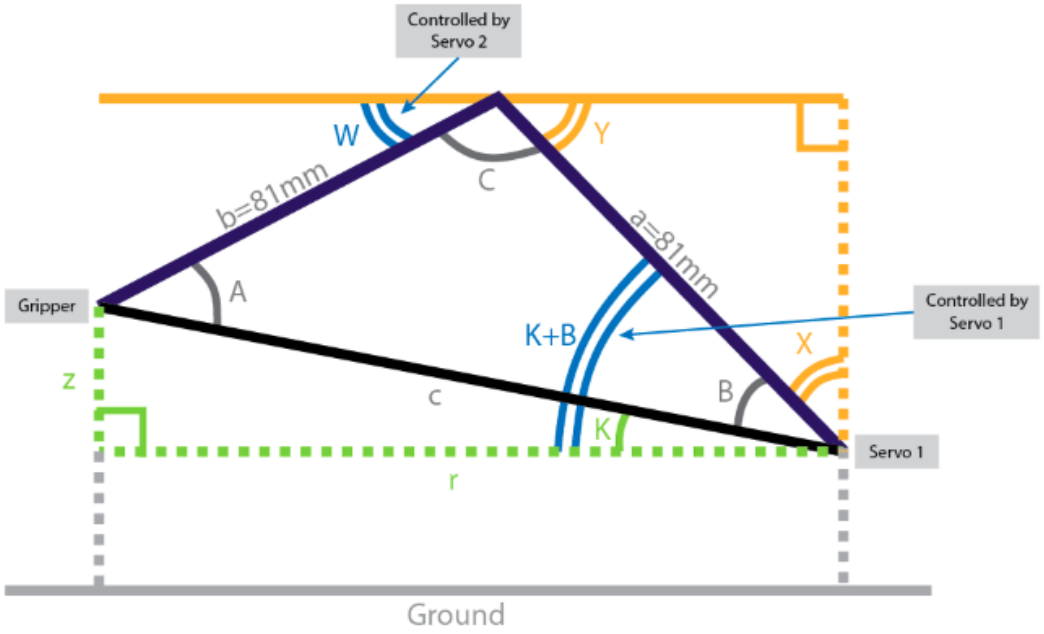
ISTA 303: Assignment 3
MeArm Robotic Arm Kinematics Diagram



Given r and z , to get W and B+K

Step ① Calculate the length of c

$$c = \sqrt{r^2 + z^2}$$

// pythagorean theory

Step ② Calculate angle C

$$\cos C = \frac{a^2+b^2-c^2}{2ab}$$

// cosine rule

$$C = \cos^{-1}\left(\frac{a^2+b^2-c^2}{2ab}\right)$$

Step ③ Calculate angle B

$$B = (180^\circ - C)/2$$

// A=B and A+B+C=18

Step ④ Calculate angle K

$$K = \tan^{-1}\left(\frac{z}{r}\right)$$

Step ⑤ Calculate B+K

$$B+K = (180^\circ - C)/2 + \tan^{-1}\left(\frac{z}{r}\right)$$

Step ⑥ Calculate W

$$W = 180^\circ - C - B+K$$