V: virtual A: arm I: IMU G: global D: rotation matrix

Matrix global to virtual: 

Rotation matrix of IMU at T Pose: 

Rotation matrix of IMU at Pose 1: 

Goal:  (1)

When T Pose we have:  (2)

When Pose 1 we have:  (3)

In Virtual coordinate:  (4)

In Global coordinate:  (5)

From (2) and (4) we have:  (6)

From (5) and (6) we have:  (7)

From (3) and (7) we have:  (8)

From (1), (4) and (5) we have:  (9)

From (8) and (9) we have:  (10)

Therefor: 

Find vector of acceleration in Virtual coordination system.

We have: 

In global and include gravity: 