1132-74-350 **Kyungmo Kim*** (kyungmokim0724@yahoo.com), 32 Piermont Rd, Cresskill, NJ 07626, and **Richard Kyung** (nycrick@gmail.com), 32 Piermont Rd, Cresskill, NJ 07626. *Dynamic Analysis of the Robot Arm Using the Forward Kinematics.*

To solve robot dynamics, there are two major methods: forward kinematics and backward kinematics. The forward recursion mechanism allows us to obtain a closed-form of equation of motion in the dynamic analysis of the robot arm.

In this paper, we found speed, acceleration, angular speed, and angular acceleration of the center of mass of each links using the forward kinematics. When the axis of rotation and the center of mass do not correspond with each other, we can calculate the moment of Inertia using the Parallel Axis Theorem.

We were able to further calculate the torque needed to obtain specific angular acceleration for each link, using the estimated speed and acceleration and dynamic equations.

Forward recursion is the process of calculating speed and acceleration in order from the base link to the end-effector link. To calculate the speed, acceleration of a link (i+1) using the forward kinematics, the information, such as speed and acceleration of the link(i) is needed. In the equations, the Joint angle, Joint's speed, and angular speed of the Joint from the reference (base) frame were found in order. (Received July 26, 2017)