

**Project Title:** Design and Control of a Three Axis Cartesian Coordinate

**Name of the Investigators:** Prof. Dr. Variddhi Ungbhakorn and  
Assist Dr. Viboon Sangveraphunsiri

**Year:** February, 1992.

### ABSTRACT

A Microcomputer is used for controlling the 3-axis cartesian type robot manipulator arm. The actuator system consists of permanent magnet DC servomotor with power amplifier. The closeloop controller is implemented with both a Current amplifier and a Voltage amplifier.

From the analysis and the experiments, the comparison between the control with the Current amplifier and Voltage amplifier indicated that proportional control is adequate for the control with voltage amplifier because of the velocity feedback compensation in the innerloop of the amplifier. The proportional plus derivative is adequate for the control with the current amplifier. The nonlinearity effects of the third axis caused by the friction and the backlash in the transmission system can be reduced by using the sufficiently high velocity feedback gain.