

POSITION CONTROL FOR FLIXEBLE JOINT MANIPULATOR USING ARTIFICIAL NEURAL Network

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ABSTRACT - The control of a rotating single flexible link manipulator and/or a two-coupled flexible link manipulator arm is a highly nonlinear problem. Due to the distributed flexibility. The Mechanical system of a flexible joint two-degree manipulator robot arm has been designed and implemented by using stepper motor, movement axis and External Model Circuit (EMC) for controller. The (EMC) includes Buffer, stepper motor driver and programmable Input/Output. This system is controlled by using two method .The first is Artificial Neural Networks (ANN). The neural network has a feed-forward topology and learning algorithm used Back-Propagation. The second is direct method to supply the program with co-ordinates as positioning data for initializing the robot arm.

1. INTRODUCTION

Robot is a multipurpose manipulator that can be programmed in order to carry special tools and components, parts, etc., with its programmed movements. Robots have many application areas listed as industrial production, educational, medicine, nuclear research and chemical industry. Robots substitute humans rapidly due to their advantages in industry.

Several types of robots are designed by considering electronic control and the programming technique. In the design of a robot, the first thing to be considered is the purpose where the robot is to be used. A robot can be examined under four sections⁽¹⁾.